US009143643B2

(12) **United States Patent**
Miyazawa

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(54) **IMAGE PROCESSING DEVICE AND SCREEN INFORMATION SUPPLY SERVER**

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(30) **Foreign Application Priority Data**

Dec. 25, 2013 (JP) 2013-267697

(51) **Int. Cl.**
G06F 3/12 (2006.01)
H04N 1/00 (2006.01)

(52) **U.S. Cl.**
CPC ***H04N 1/00411*** (2013.01); ***H04N 1/0023*** (2013.01); ***H04N 1/00233*** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

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(57) **ABSTRACT**

An image processing device first displays a first screen when first screen information is acquired. The image processing device displays a second screen when a screen change instruction is given from the user in a state in which the first screen is displayed on the display unit. The image processing device executes the image processing related to an object option when the target option is selected in a state in which the second screen is displayed. The image processing device displays the second screen including the option information when the second screen information is acquired after the image processing is executed.

10 Claims, 17 Drawing Sheets

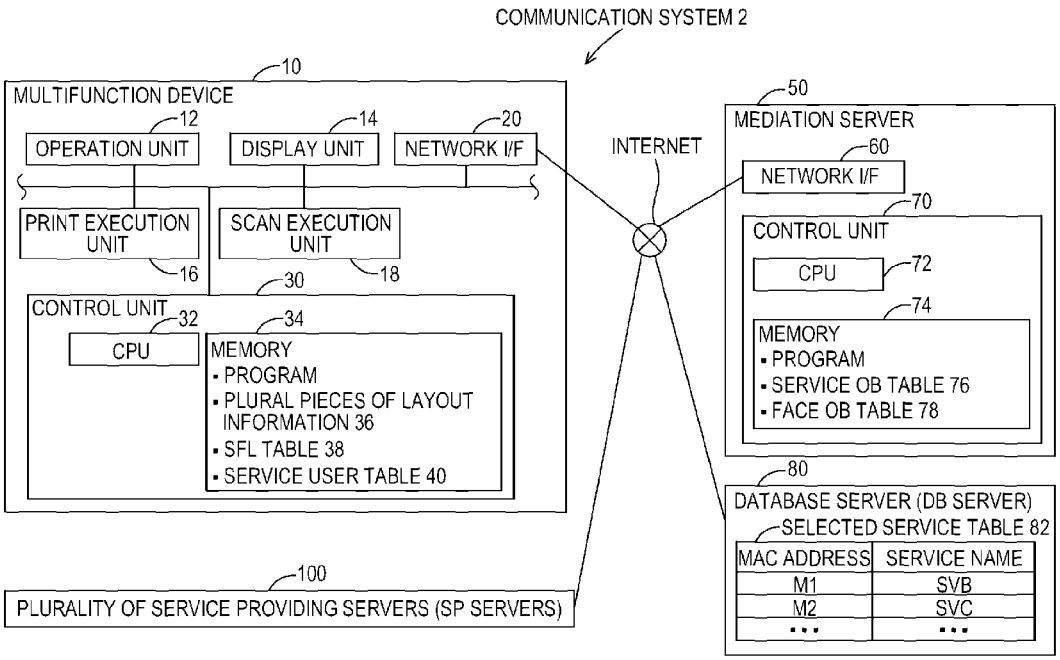


FIG. 1

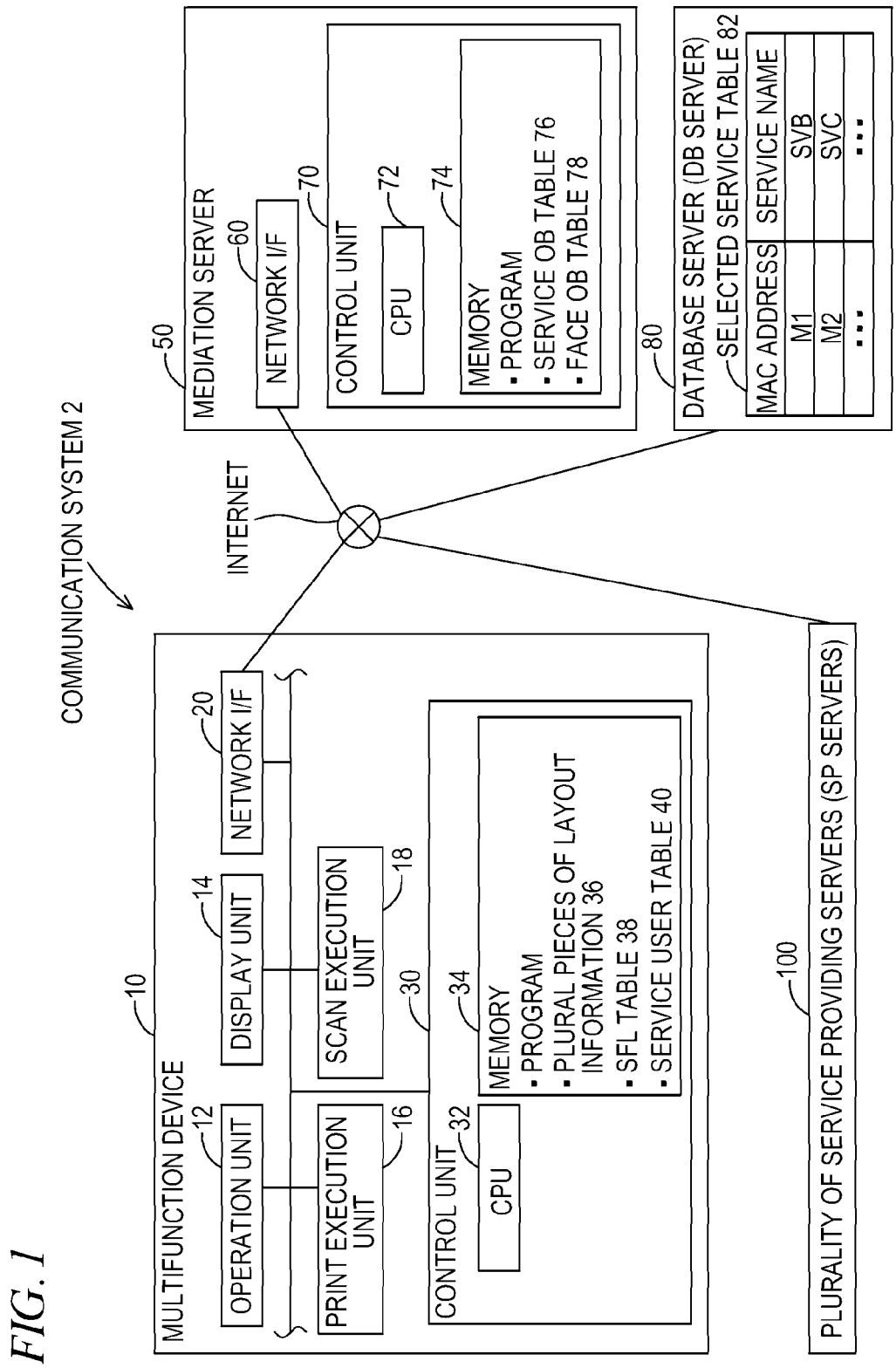
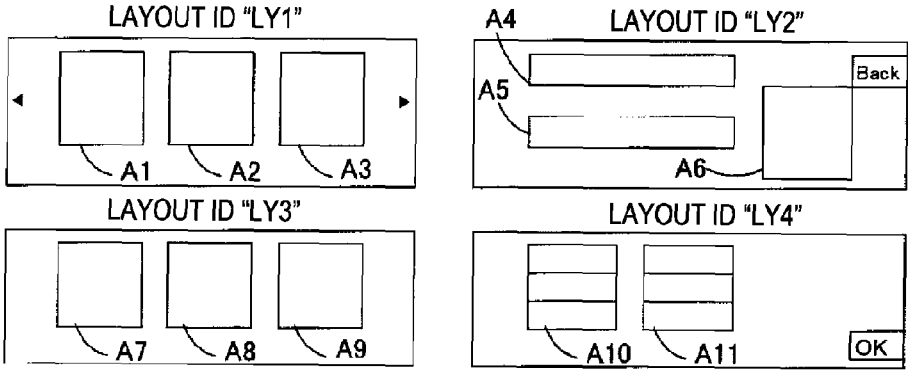

COMMUNICATION SYSTEM 2
INTERNET
MULTIFUNCTION DEVICE
10
OPERATION UNIT
12
DISPLAY UNIT
14
PRINT EXECUTION UNIT
16
SCAN EXECUTION UNIT
18
NETWORK I/F
20
CONTROL UNIT
30
CPU
32
MEMORY
34
• PROGRAM
• PLURAL PIECES OF LAYOUT INFORMATION 36
• SFL TABLE 38
• SERVICE USER TABLE 40
MEDIATION SERVER
50
NETWORK I/F
60
CONTROL UNIT
70
CPU
72
MEMORY
74
• PROGRAM
• SERVICE OB TABLE 76
• FACE OB TABLE 78
DATABASE SERVER (DB SERVER)
80
SELECTED SERVICE TABLE 82
MAC ADDRESS
SERVICE NAME
M1
SVB
M2
SVC
PLURALITY OF SERVICE PROVIDING SERVERS (SP SERVERS)
100

FIG. 2

(ONE EXAMPLE OF DATA IN MULTIFUNCTION DEVICE)

PLURAL PIECES OF LAYOUT INFORMATION 36



SFL TABLE 38

USER NAME	PASSWORD	PRINT	SCAN
U1	PU1	OK	OK
U2	PU2	NG	OK
...	...	...	...

SERVICE USER TABLE 40

SERVICE NAME	ACCOUNT NAME	PASSWORD	FACE ID
SVA	AN0	PN0	IDF0
SVE	AN1	PN1	IDF1
...	...	...	...

FIG. 3

(EXAMPLE OF DATA IN MEDIATION SERVER)

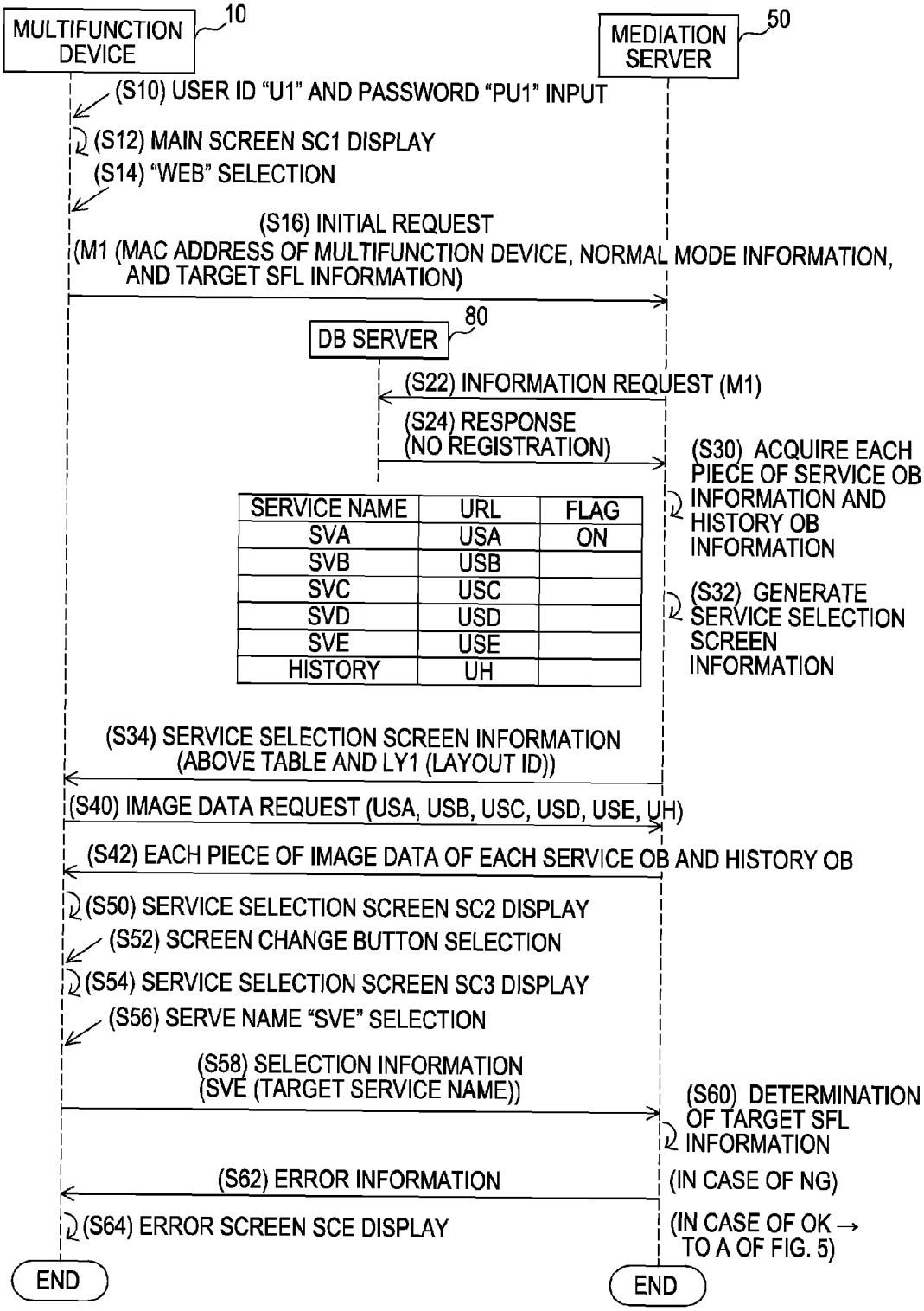
SERVICE OB TABLE 76

URL	SERVICE NAME	IMAGE DATA
USA	SVA	A
USB	SVB	B
...	...	...
UH	HISTORY	History

FACE OB TABLE 78

URL	FACE ID	IMAGE DATA
UF1	IDF1	＼(^ ^)／
UF2	IDF2	(^_^)
...	...	...

FIG. 4



SERVICE NAME	URL	FLAG
SVA	USA	ON
SVB	USB	
SVC	USC	
SVD	USD	
SVE	USE	
HISTORY	UH	

FIG. 5

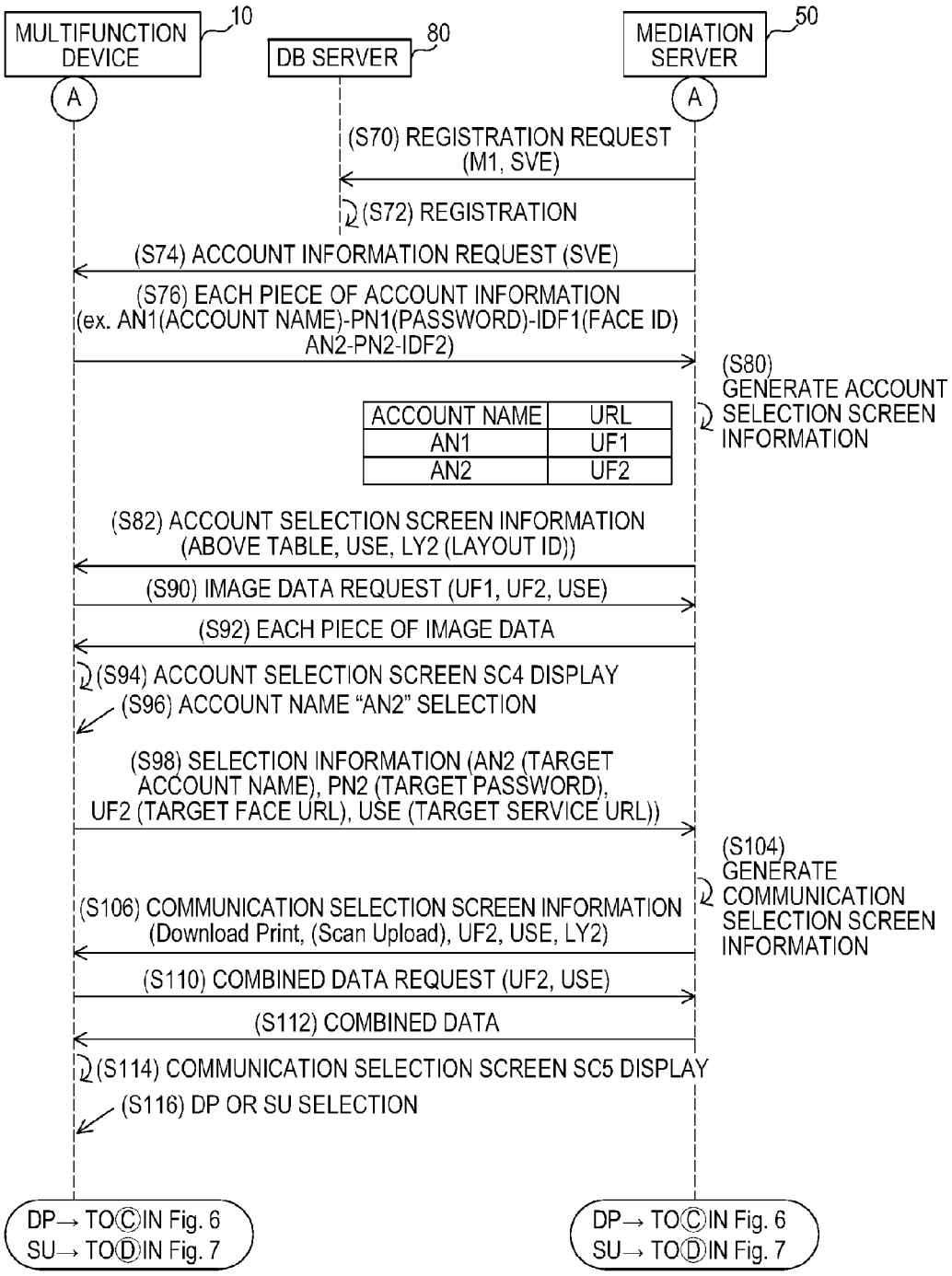

MULTIFUNCTION DEVICE
10
DB SERVER
80
MEDIATION SERVER
50
A
A
(S70) REGISTRATION REQUEST (M1, SVE)
(S72) REGISTRATION
(S74) ACCOUNT INFORMATION REQUEST (SVE)
(S76) EACH PIECE OF ACCOUNT INFORMATION (ex. AN1(ACCOUNT NAME)-PN1(PASSWORD)-IDF1(FACE ID) AN2-PN2-IDF2)
(S80) GENERATE ACCOUNT SELECTION SCREEN INFORMATION
ACCOUNT NAME | URL
AN1 | UF1
AN2 | UF2
(S82) ACCOUNT SELECTION SCREEN INFORMATION (ABOVE TABLE, USE, LY2 (LAYOUT ID))
(S90) IMAGE DATA REQUEST (UF1, UF2, USE)
(S92) EACH PIECE OF IMAGE DATA
(S94) ACCOUNT SELECTION SCREEN SC4 DISPLAY
(S96) ACCOUNT NAME "AN2" SELECTION
(S98) SELECTION INFORMATION (AN2 (TARGET ACCOUNT NAME), PN2 (TARGET PASSWORD), UF2 (TARGET FACE URL), USE (TARGET SERVICE URL))
(S104) GENERATE COMMUNICATION SELECTION SCREEN INFORMATION
(S106) COMMUNICATION SELECTION SCREEN INFORMATION (Download Print, (Scan Upload), UF2, USE, LY2)
(S110) COMBINED DATA REQUEST (UF2, USE)
(S112) COMBINED DATA
(S114) COMMUNICATION SELECTION SCREEN SC5 DISPLAY
(S116) DP OR SU SELECTION
DP→ TOⒸIN Fig. 6
SU→ TOⒹIN Fig. 7
DP→ TOⒸIN Fig. 6
SU→ TOⒹIN Fig. 7

FIG. 6

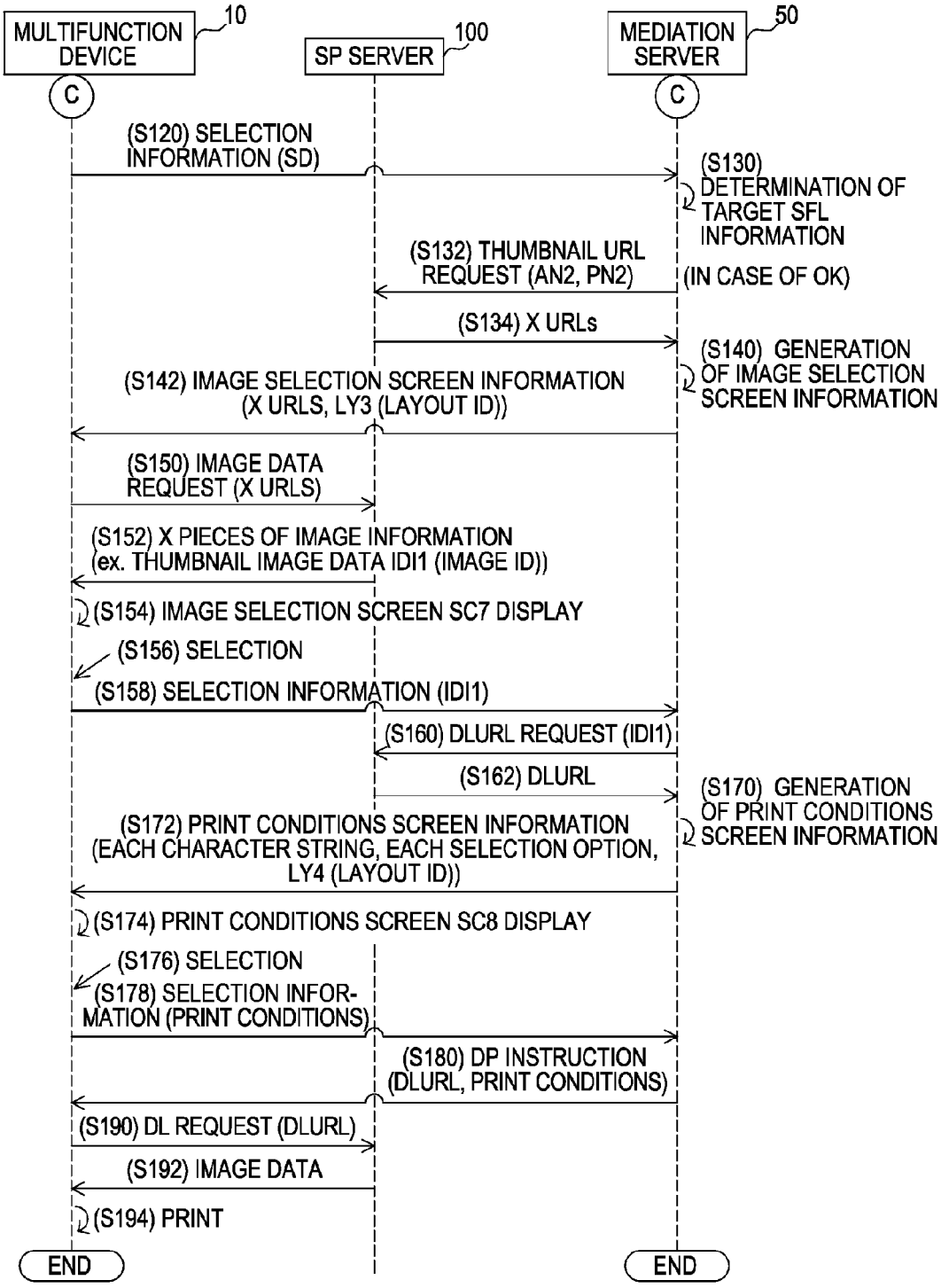

MULTIFUNCTION DEVICE
10
SP SERVER
100
MEDIATION SERVER
50
C
C
(S120) SELECTION INFORMATION (SD)
(S130) DETERMINATION OF TARGET SFL INFORMATION
(S132) THUMBNAIL URL REQUEST (AN2, PN2)
(IN CASE OF OK)
(S134) X URLs
(S140) GENERATION OF IMAGE SELECTION SCREEN INFORMATION
(S142) IMAGE SELECTION SCREEN INFORMATION (X URLS, LY3 (LAYOUT ID))
(S150) IMAGE DATA REQUEST (X URLS)
(S152) X PIECES OF IMAGE INFORMATION (ex. THUMBNAIL IMAGE DATA IDI1 (IMAGE ID))
(S154) IMAGE SELECTION SCREEN SC7 DISPLAY
(S156) SELECTION
(S158) SELECTION INFORMATION (IDI1)
(S160) DLURL REQUEST (IDI1)
(S162) DLURL
(S170) GENERATION OF PRINT CONDITIONS SCREEN INFORMATION
(S172) PRINT CONDITIONS SCREEN INFORMATION (EACH CHARACTER STRING, EACH SELECTION OPTION, LY4 (LAYOUT ID))
(S174) PRINT CONDITIONS SCREEN SC8 DISPLAY
(S176) SELECTION
(S178) SELECTION INFORMATION (PRINT CONDITIONS)
(S180) DP INSTRUCTION (DLURL, PRINT CONDITIONS)
(S190) DL REQUEST (DLURL)
(S192) IMAGE DATA
(S194) PRINT
END
END

FIG. 7

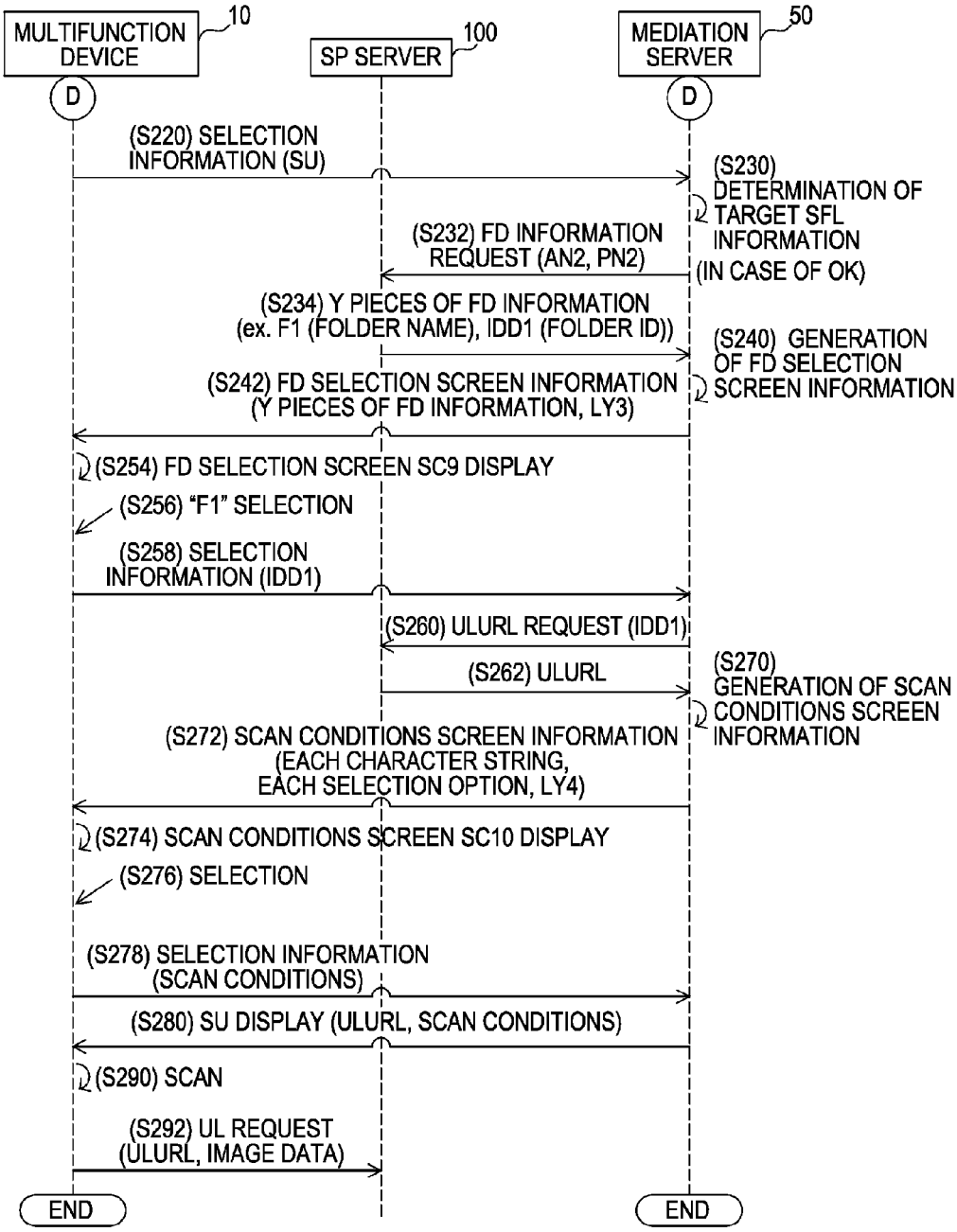

MULTIFUNCTION DEVICE
10
SP SERVER
100
MEDIATION SERVER
50
D
D
(S220) SELECTION INFORMATION (SU)
(S230) DETERMINATION OF TARGET SFL INFORMATION (IN CASE OF OK)
(S232) FD INFORMATION REQUEST (AN2, PN2)
(S234) Y PIECES OF FD INFORMATION (ex. F1 (FOLDER NAME), IDD1 (FOLDER ID))
(S240) GENERATION OF FD SELECTION SCREEN INFORMATION
(S242) FD SELECTION SCREEN INFORMATION (Y PIECES OF FD INFORMATION, LY3)
(S254) FD SELECTION SCREEN SC9 DISPLAY
(S256) "F1" SELECTION
(S258) SELECTION INFORMATION (IDD1)
(S260) ULURL REQUEST (IDD1)
(S262) ULURL
(S270) GENERATION OF SCAN CONDITIONS SCREEN INFORMATION
(S272) SCAN CONDITIONS SCREEN INFORMATION (EACH CHARACTER STRING, EACH SELECTION OPTION, LY4)
(S274) SCAN CONDITIONS SCREEN SC10 DISPLAY
(S276) SELECTION
(S278) SELECTION INFORMATION (SCAN CONDITIONS)
(S280) SU DISPLAY (ULURL, SCAN CONDITIONS)
(S290) SCAN
(S292) UL REQUEST (ULURL, IMAGE DATA)
END
END

FIG. 8

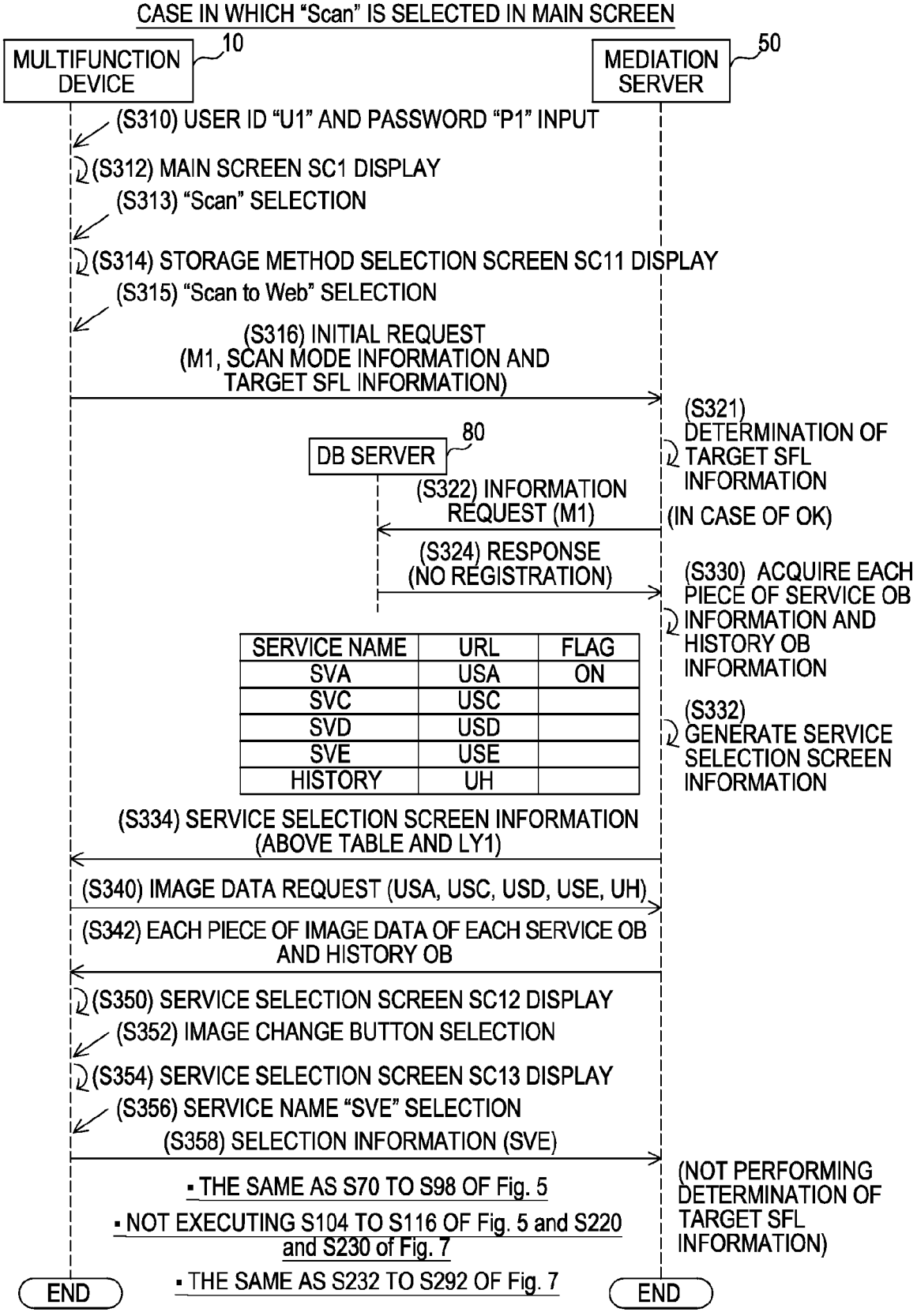

CASE IN WHICH "Scan" IS SELECTED IN MAIN SCREEN
MULTIFUNCTION DEVICE
10
MEDIATION SERVER
50
(S310) USER ID "U1" AND PASSWORD "P1" INPUT
(S312) MAIN SCREEN SC1 DISPLAY
(S313) "Scan" SELECTION
(S314) STORAGE METHOD SELECTION SCREEN SC11 DISPLAY
(S315) "Scan to Web" SELECTION
(S316) INITIAL REQUEST (M1, SCAN MODE INFORMATION AND TARGET SFL INFORMATION)
(S321) DETERMINATION OF TARGET SFL INFORMATION (IN CASE OF OK)
DB SERVER
80
(S322) INFORMATION REQUEST (M1)
(S324) RESPONSE (NO REGISTRATION)
(S330) ACQUIRE EACH PIECE OF SERVICE OB INFORMATION AND HISTORY OB INFORMATION
SERVICE NAME | URL | FLAG
SVA | USA | ON
SVC | USC |
SVD | USD |
SVE | USE |
HISTORY | UH |
(S332) GENERATE SERVICE SELECTION SCREEN INFORMATION
(S334) SERVICE SELECTION SCREEN INFORMATION (ABOVE TABLE AND LY1)
(S340) IMAGE DATA REQUEST (USA, USC, USD, USE, UH)
(S342) EACH PIECE OF IMAGE DATA OF EACH SERVICE OB AND HISTORY OB
(S350) SERVICE SELECTION SCREEN SC12 DISPLAY
(S352) IMAGE CHANGE BUTTON SELECTION
(S354) SERVICE SELECTION SCREEN SC13 DISPLAY
(S356) SERVICE NAME "SVE" SELECTION
(S358) SELECTION INFORMATION (SVE)
(NOT PERFORMING DETERMINATION OF TARGET SFL INFORMATION)
▪ THE SAME AS S70 TO S98 OF Fig. 5
▪ NOT EXECUTING S104 TO S116 OF Fig. 5 and S220 and S230 of Fig. 7
▪ THE SAME AS S232 TO S292 OF Fig. 7
END
END

FIG. 9

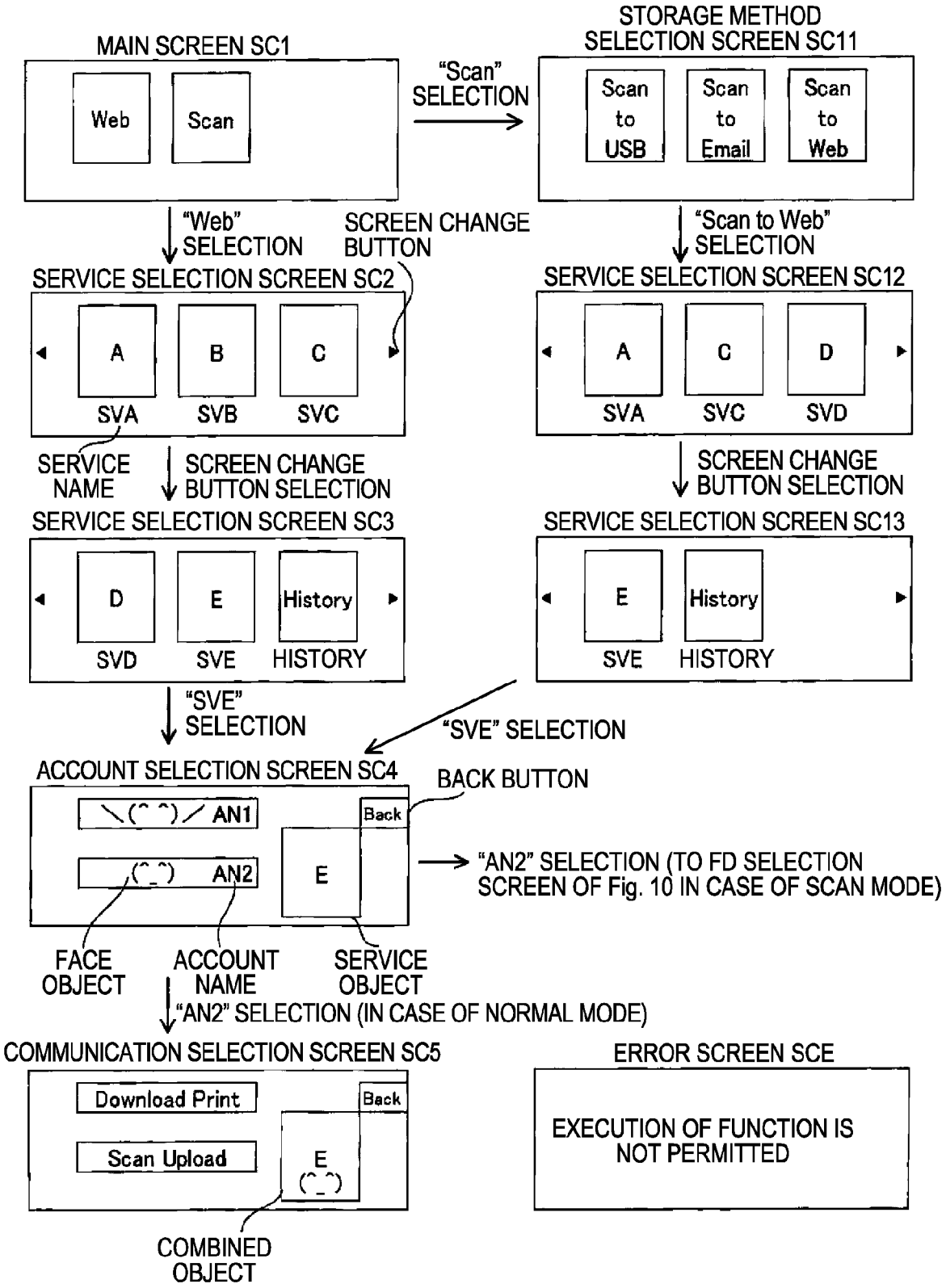

MAIN SCREEN SC1
Web
Scan
"Scan" SELECTION
STORAGE METHOD SELECTION SCREEN SC11
Scan to USB
Scan to Email
Scan to Web
"Web" SELECTION
SCREEN CHANGE BUTTON
"Scan to Web" SELECTION
SERVICE SELECTION SCREEN SC2
A
B
C
SVA
SVB
SVC
SERVICE SELECTION SCREEN SC12
A
C
D
SVA
SVC
SVD
SERVICE NAME
SCREEN CHANGE BUTTON SELECTION
SCREEN CHANGE BUTTON SELECTION
SERVICE SELECTION SCREEN SC3
D
E
History
SVD
SVE
HISTORY
SERVICE SELECTION SCREEN SC13
E
History
SVE
HISTORY
"SVE" SELECTION
"SVE" SELECTION
ACCOUNT SELECTION SCREEN SC4
BACK BUTTON
AN1
AN2
Back
E
"AN2" SELECTION (TO FD SELECTION SCREEN OF Fig. 10 IN CASE OF SCAN MODE)
FACE OBJECT
ACCOUNT NAME
SERVICE OBJECT
"AN2" SELECTION (IN CASE OF NORMAL MODE)
COMMUNICATION SELECTION SCREEN SC5
Download Print
Scan Upload
Back
E
COMBINED OBJECT
ERROR SCREEN SCE
EXECUTION OF FUNCTION IS NOT PERMITTED

FIG. 10

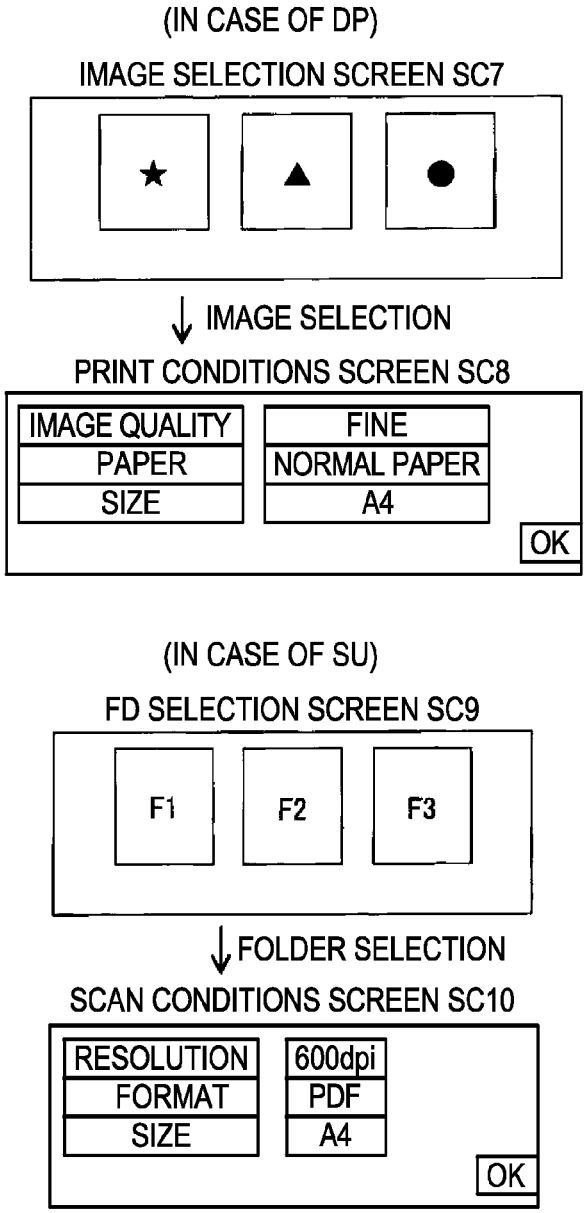

(IN CASE OF DP)
IMAGE SELECTION SCREEN SC7
IMAGE SELECTION
PRINT CONDITIONS SCREEN SC8
IMAGE QUALITY
FINE
PAPER
NORMAL PAPER
SIZE
A4
OK
(IN CASE OF SU)
FD SELECTION SCREEN SC9
F1
F2
F3
FOLDER SELECTION
SCAN CONDITIONS SCREEN SC10
RESOLUTION
600dpi
FORMAT
PDF
SIZE
A4
OK

FIG. 11

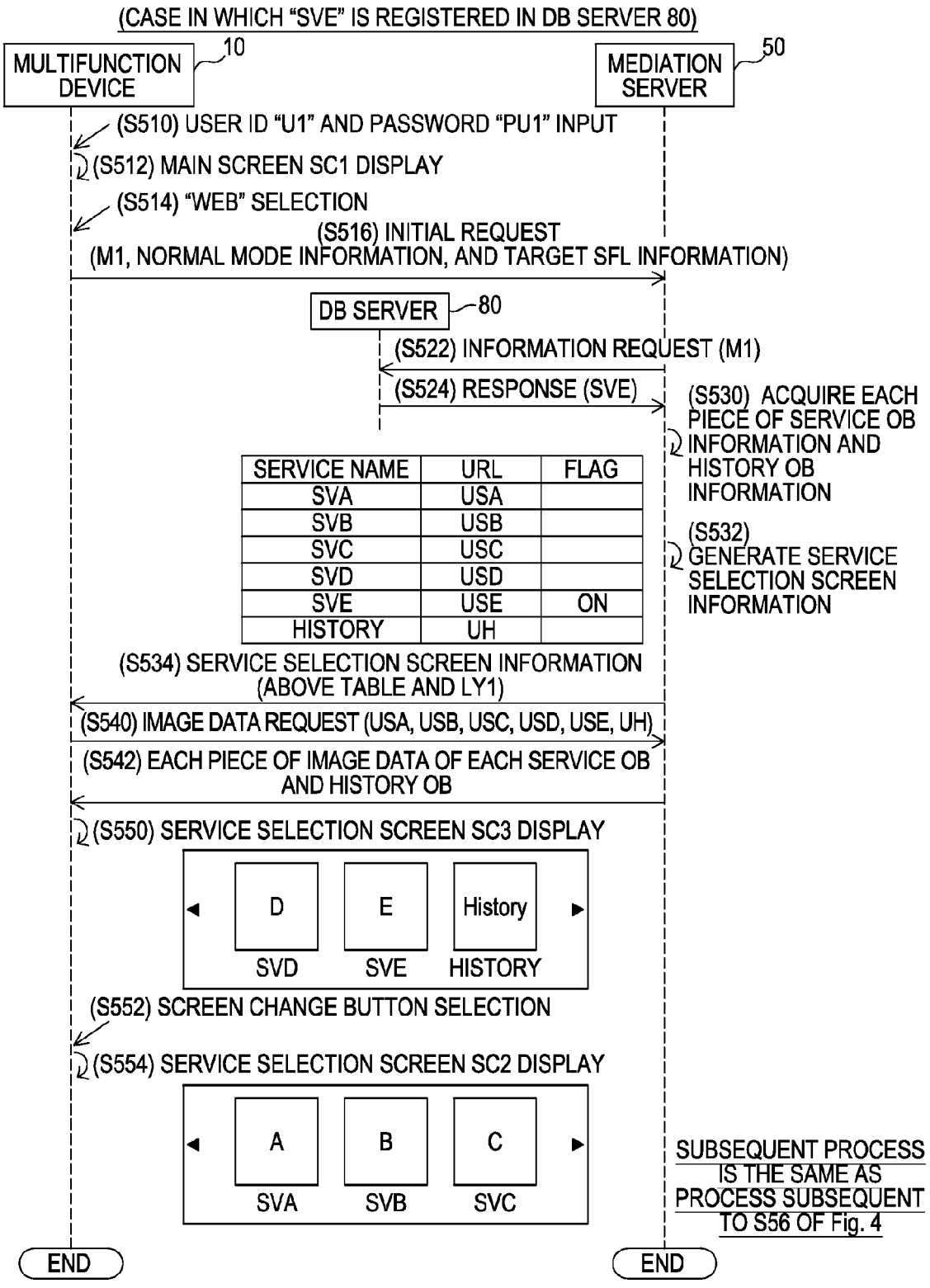

(CASE IN WHICH "SVE" IS REGISTERED IN DB SERVER 80)
MULTIFUNCTION DEVICE
10
MEDIATION SERVER
50
(S510) USER ID "U1" AND PASSWORD "PU1" INPUT
(S512) MAIN SCREEN SC1 DISPLAY
(S514) "WEB" SELECTION
(S516) INITIAL REQUEST
(M1, NORMAL MODE INFORMATION, AND TARGET SFL INFORMATION)
DB SERVER
80
(S522) INFORMATION REQUEST (M1)
(S524) RESPONSE (SVE)
(S530) ACQUIRE EACH PIECE OF SERVICE OB INFORMATION AND HISTORY OB INFORMATION
SERVICE NAME | URL | FLAG
SVA | USA |
SVB | USB |
SVC | USC |
SVD | USD |
SVE | USE | ON
HISTORY | UH |
(S532) GENERATE SERVICE SELECTION SCREEN INFORMATION
(S534) SERVICE SELECTION SCREEN INFORMATION (ABOVE TABLE AND LY1)
(S540) IMAGE DATA REQUEST (USA, USB, USC, USD, USE, UH)
(S542) EACH PIECE OF IMAGE DATA OF EACH SERVICE OB AND HISTORY OB
(S550) SERVICE SELECTION SCREEN SC3 DISPLAY
D
E
History
SVD
SVE
HISTORY
(S552) SCREEN CHANGE BUTTON SELECTION
(S554) SERVICE SELECTION SCREEN SC2 DISPLAY
A
B
C
SVA
SVB
SVC
SUBSEQUENT PROCESS IS THE SAME AS PROCESS SUBSEQUENT TO S56 OF Fig. 4
END
END

FIG. 12

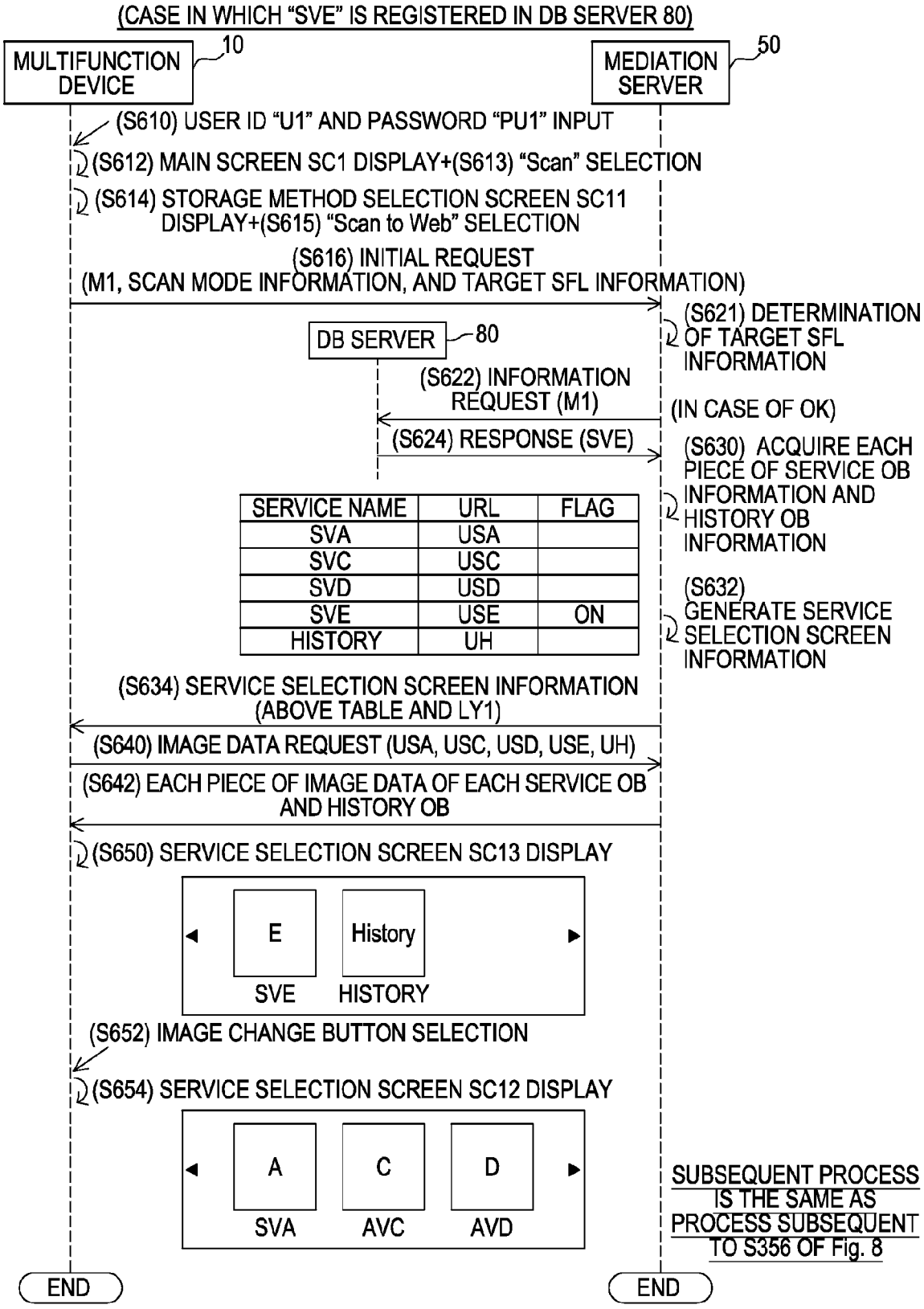

(CASE IN WHICH "SVE" IS REGISTERED IN DB SERVER 80)
MULTIFUNCTION DEVICE
10
MEDIATION SERVER
50
(S610) USER ID "U1" AND PASSWORD "PU1" INPUT
(S612) MAIN SCREEN SC1 DISPLAY+(S613) "Scan" SELECTION
(S614) STORAGE METHOD SELECTION SCREEN SC11 DISPLAY+(S615) "Scan to Web" SELECTION
(S616) INITIAL REQUEST (M1, SCAN MODE INFORMATION, AND TARGET SFL INFORMATION)
(S621) DETERMINATION OF TARGET SFL INFORMATION
DB SERVER
80
(S622) INFORMATION REQUEST (M1)
(IN CASE OF OK)
(S624) RESPONSE (SVE)
(S630) ACQUIRE EACH PIECE OF SERVICE OB INFORMATION AND HISTORY OB INFORMATION
SERVICE NAME | URL | FLAG
SVA | USA |
SVC | USC |
SVD | USD |
SVE | USE | ON
HISTORY | UH |
(S632) GENERATE SERVICE SELECTION SCREEN INFORMATION
(S634) SERVICE SELECTION SCREEN INFORMATION (ABOVE TABLE AND LY1)
(S640) IMAGE DATA REQUEST (USA, USC, USD, USE, UH)
(S642) EACH PIECE OF IMAGE DATA OF EACH SERVICE OB AND HISTORY OB
(S650) SERVICE SELECTION SCREEN SC13 DISPLAY
E
History
SVE
HISTORY
(S652) IMAGE CHANGE BUTTON SELECTION
(S654) SERVICE SELECTION SCREEN SC12 DISPLAY
A
C
D
SVA
AVC
AVD
SUBSEQUENT PROCESS IS THE SAME AS PROCESS SUBSEQUENT TO S356 OF Fig. 8
END
END

FIG. 13

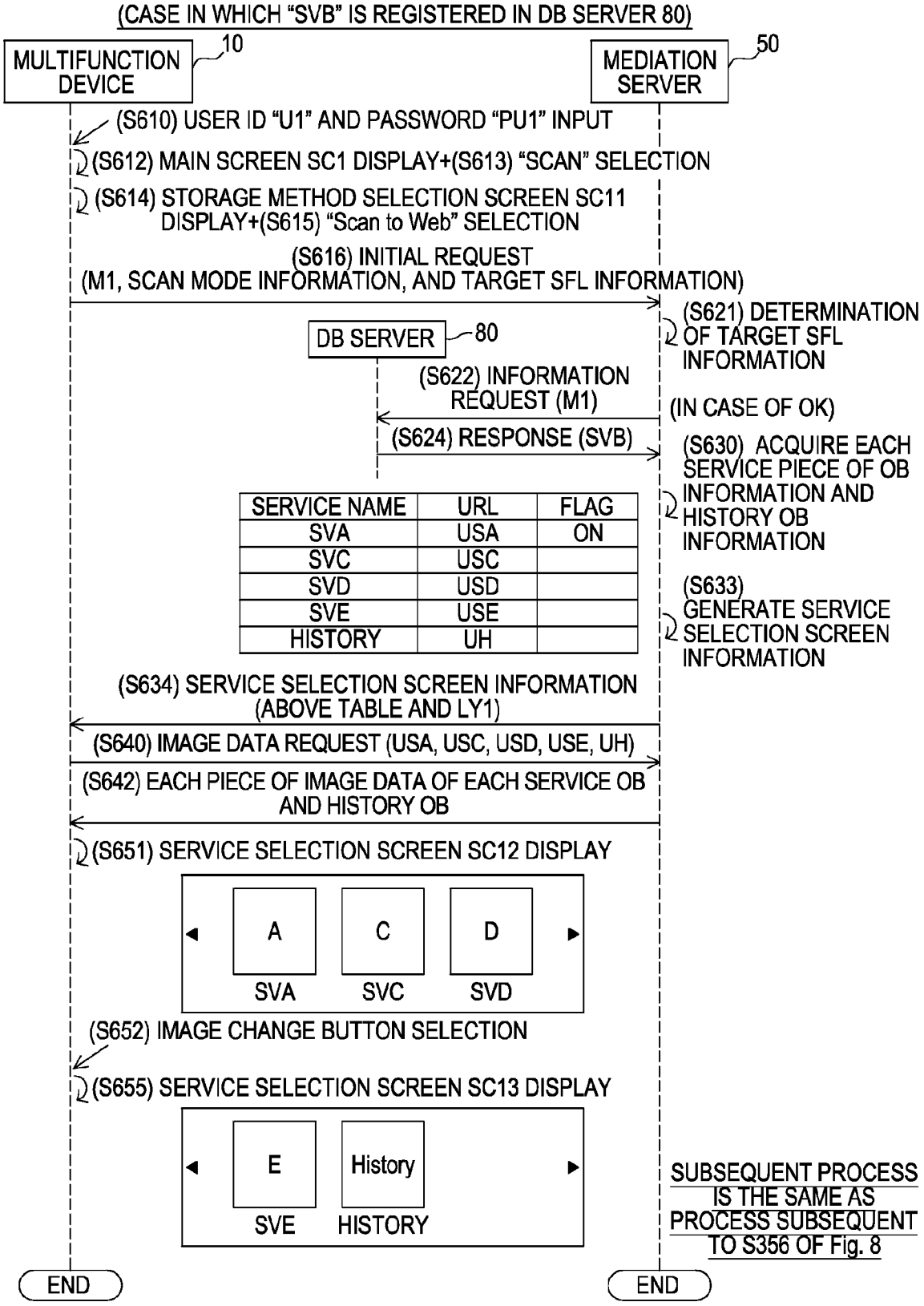

(CASE IN WHICH "SVB" IS REGISTERED IN DB SERVER 80)
MULTIFUNCTION DEVICE
10
MEDIATION SERVER
50
(S610) USER ID "U1" AND PASSWORD "PU1" INPUT
(S612) MAIN SCREEN SC1 DISPLAY+(S613) "SCAN" SELECTION
(S614) STORAGE METHOD SELECTION SCREEN SC11 DISPLAY+(S615) "Scan to Web" SELECTION
(S616) INITIAL REQUEST (M1, SCAN MODE INFORMATION, AND TARGET SFL INFORMATION)
(S621) DETERMINATION OF TARGET SFL INFORMATION
DB SERVER
80
(S622) INFORMATION REQUEST (M1)
(IN CASE OF OK)
(S624) RESPONSE (SVB)
(S630) ACQUIRE EACH SERVICE PIECE OF OB INFORMATION AND HISTORY OB INFORMATION
SERVICE NAME | URL | FLAG
SVA | USA | ON
SVC | USC |
SVD | USD |
SVE | USE |
HISTORY | UH |
(S633) GENERATE SERVICE SELECTION SCREEN INFORMATION
(S634) SERVICE SELECTION SCREEN INFORMATION (ABOVE TABLE AND LY1)
(S640) IMAGE DATA REQUEST (USA, USC, USD, USE, UH)
(S642) EACH PIECE OF IMAGE DATA OF EACH SERVICE OB AND HISTORY OB
(S651) SERVICE SELECTION SCREEN SC12 DISPLAY
A
C
D
SVA
SVC
SVD
(S652) IMAGE CHANGE BUTTON SELECTION
(S655) SERVICE SELECTION SCREEN SC13 DISPLAY
E
History
SVE
HISTORY
SUBSEQUENT PROCESS IS THE SAME AS PROCESS SUBSEQUENT TO S356 OF Fig. 8
END
END

FIG. 14

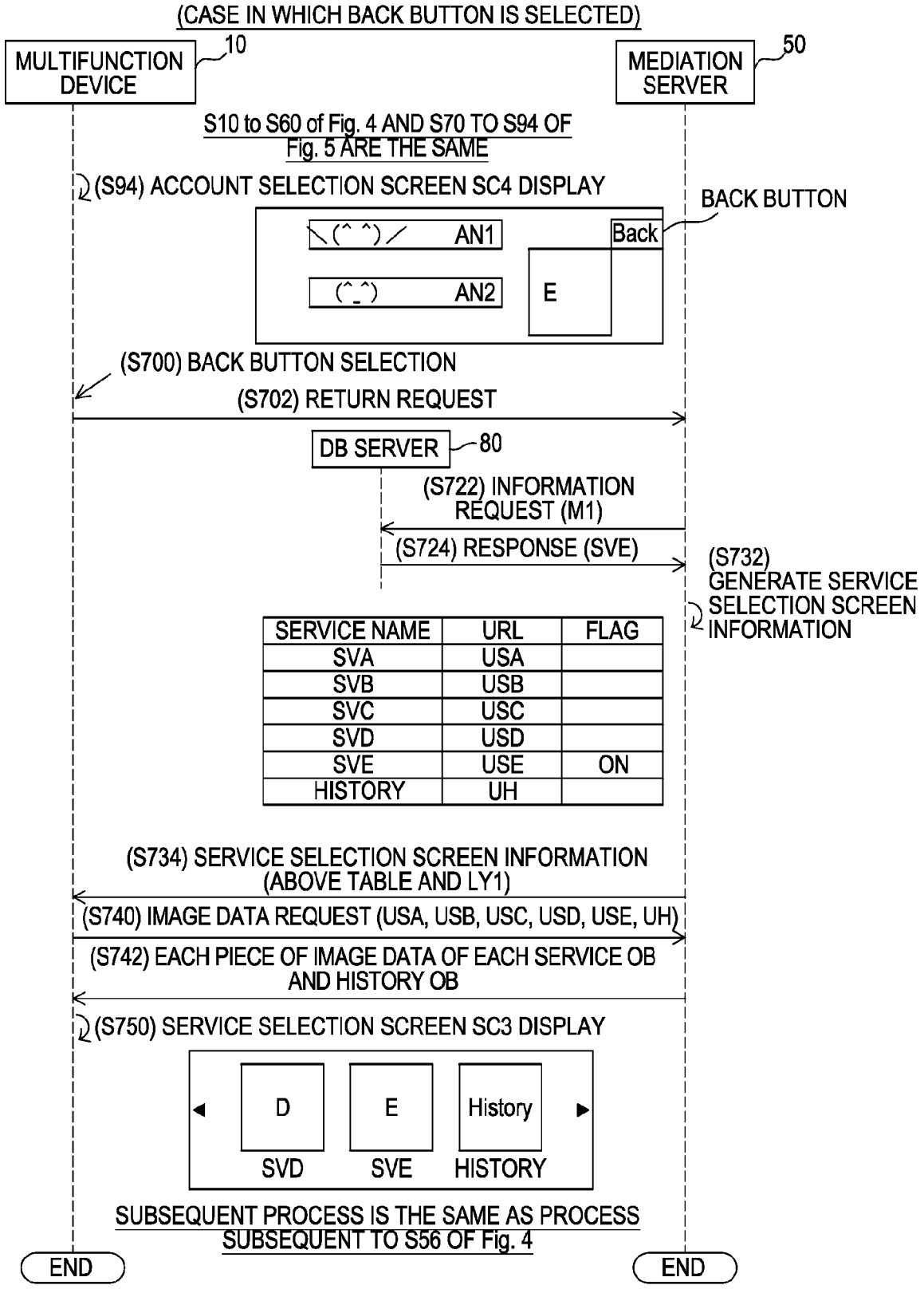

(CASE IN WHICH BACK BUTTON IS SELECTED)
MULTIFUNCTION DEVICE
10
MEDIATION SERVER
50
S10 to S60 of Fig. 4 AND S70 TO S94 OF Fig. 5 ARE THE SAME
(S94) ACCOUNT SELECTION SCREEN SC4 DISPLAY
BACK BUTTON
Back
AN1
AN2
E
(S700) BACK BUTTON SELECTION
(S702) RETURN REQUEST
DB SERVER
80
(S722) INFORMATION REQUEST (M1)
(S724) RESPONSE (SVE)
(S732) GENERATE SERVICE SELECTION SCREEN INFORMATION
SERVICE NAME | URL | FLAG
SVA | USA |
SVB | USB |
SVC | USC |
SVD | USD |
SVE | USE | ON
HISTORY | UH |
(S734) SERVICE SELECTION SCREEN INFORMATION (ABOVE TABLE AND LY1)
(S740) IMAGE DATA REQUEST (USA, USB, USC, USD, USE, UH)
(S742) EACH PIECE OF IMAGE DATA OF EACH SERVICE OB AND HISTORY OB
(S750) SERVICE SELECTION SCREEN SC3 DISPLAY
D
E
History
SVD
SVE
HISTORY
SUBSEQUENT PROCESS IS THE SAME AS PROCESS SUBSEQUENT TO S56 OF Fig. 4
END
END

FIG. 15

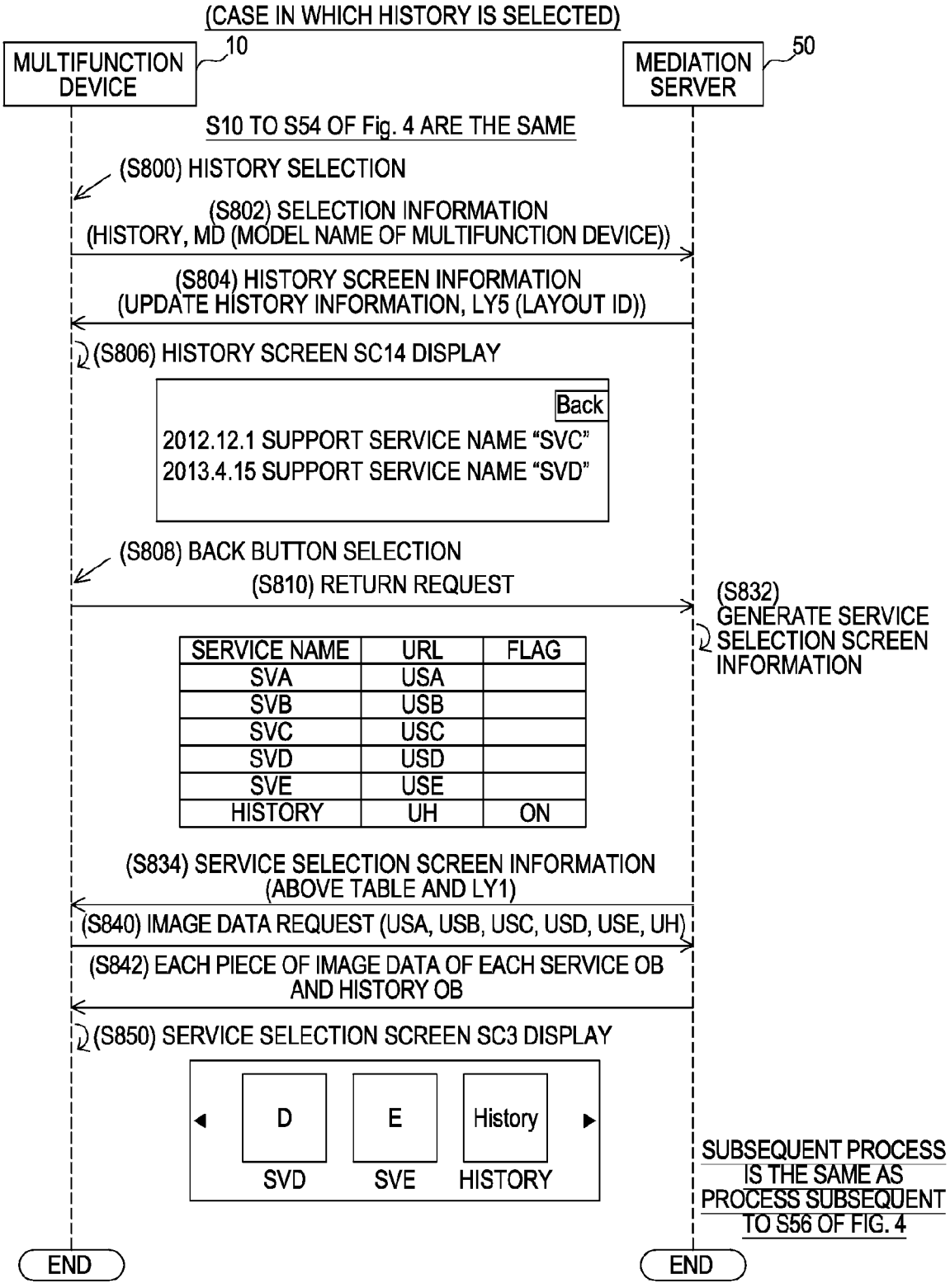

(CASE IN WHICH HISTORY IS SELECTED)
MULTIFUNCTION DEVICE
10
MEDIATION SERVER
50
S10 TO S54 OF Fig. 4 ARE THE SAME
(S800) HISTORY SELECTION
(S802) SELECTION INFORMATION (HISTORY, MD (MODEL NAME OF MULTIFUNCTION DEVICE))
(S804) HISTORY SCREEN INFORMATION (UPDATE HISTORY INFORMATION, LY5 (LAYOUT ID))
(S806) HISTORY SCREEN SC14 DISPLAY
Back
2012.12.1 SUPPORT SERVICE NAME "SVC"
2013.4.15 SUPPORT SERVICE NAME "SVD"
(S808) BACK BUTTON SELECTION
(S810) RETURN REQUEST
(S832) GENERATE SERVICE SELECTION SCREEN INFORMATION
SERVICE NAME | URL | FLAG
SVA | USA |
SVB | USB |
SVC | USC |
SVD | USD |
SVE | USE |
HISTORY | UH | ON
(S834) SERVICE SELECTION SCREEN INFORMATION (ABOVE TABLE AND LY1)
(S840) IMAGE DATA REQUEST (USA, USB, USC, USD, USE, UH)
(S842) EACH PIECE OF IMAGE DATA OF EACH SERVICE OB AND HISTORY OB
(S850) SERVICE SELECTION SCREEN SC3 DISPLAY
D
E
History
SVD
SVE
HISTORY
SUBSEQUENT PROCESS IS THE SAME AS PROCESS SUBSEQUENT TO S56 OF FIG. 4
END
END

FIG. 16

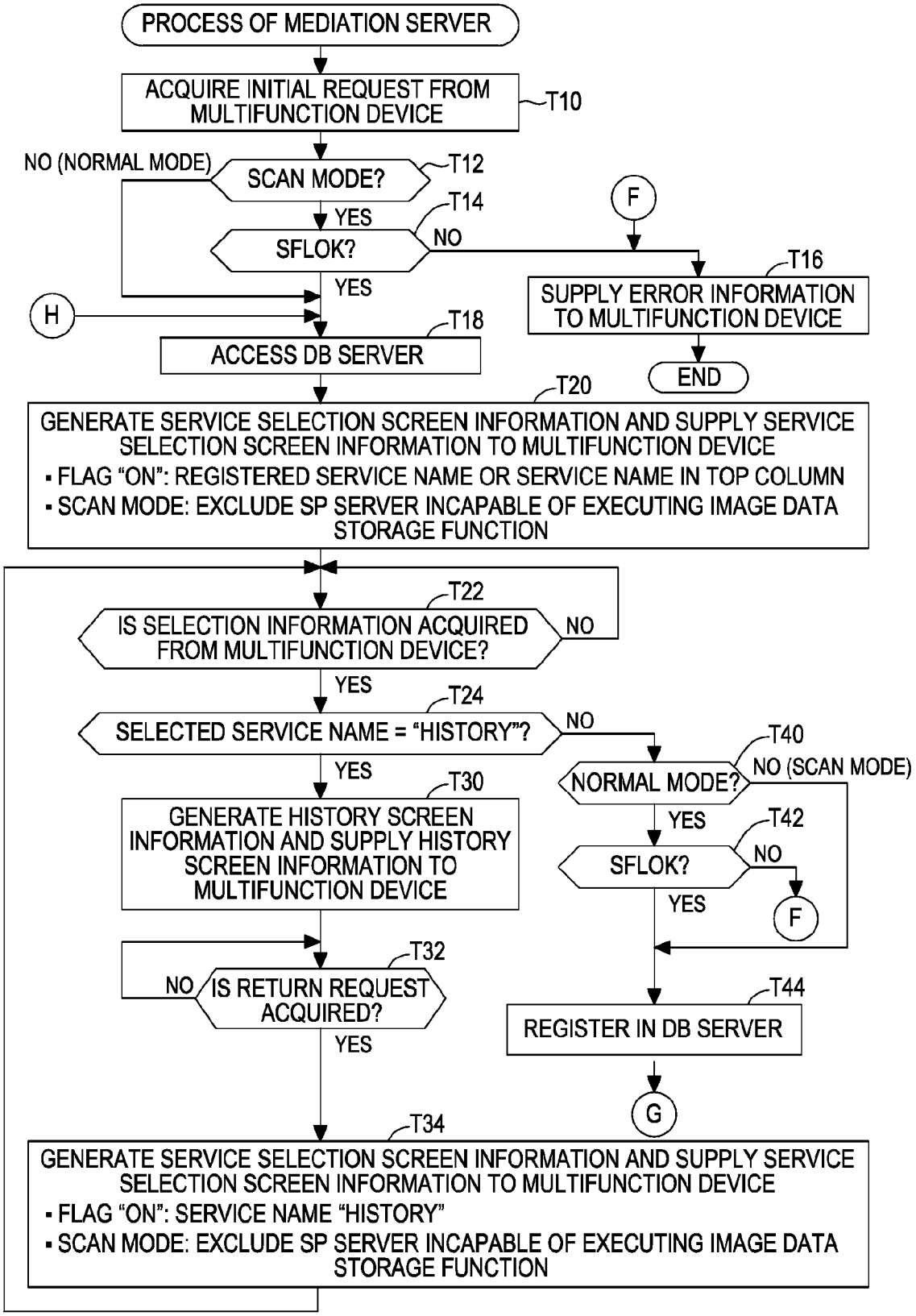

PROCESS OF MEDIATION SERVER
ACQUIRE INITIAL REQUEST FROM MULTIFUNCTION DEVICE
T10
NO (NORMAL MODE)
SCAN MODE?
T12
YES
T14
SFLOK?
NO
F
T16
SUPPLY ERROR INFORMATION TO MULTIFUNCTION DEVICE
END
YES
H
T18
ACCESS DB SERVER
T20
GENERATE SERVICE SELECTION SCREEN INFORMATION AND SUPPLY SERVICE SELECTION SCREEN INFORMATION TO MULTIFUNCTION DEVICE
▪ FLAG "ON": REGISTERED SERVICE NAME OR SERVICE NAME IN TOP COLUMN
▪ SCAN MODE: EXCLUDE SP SERVER INCAPABLE OF EXECUTING IMAGE DATA STORAGE FUNCTION
T22
IS SELECTION INFORMATION ACQUIRED FROM MULTIFUNCTION DEVICE?
NO
YES
T24
SELECTED SERVICE NAME = "HISTORY"?
NO
T40
NORMAL MODE?
NO (SCAN MODE)
YES
T30
GENERATE HISTORY SCREEN INFORMATION AND SUPPLY HISTORY SCREEN INFORMATION TO MULTIFUNCTION DEVICE
T42
SFLOK?
NO
YES
F
T32
NO
IS RETURN REQUEST ACQUIRED?
YES
T44
REGISTER IN DB SERVER
G
T34
GENERATE SERVICE SELECTION SCREEN INFORMATION AND SUPPLY SERVICE SELECTION SCREEN INFORMATION TO MULTIFUNCTION DEVICE
▪ FLAG "ON": SERVICE NAME "HISTORY"
▪ SCAN MODE: EXCLUDE SP SERVER INCAPABLE OF EXECUTING IMAGE DATA STORAGE FUNCTION

FIG. 17

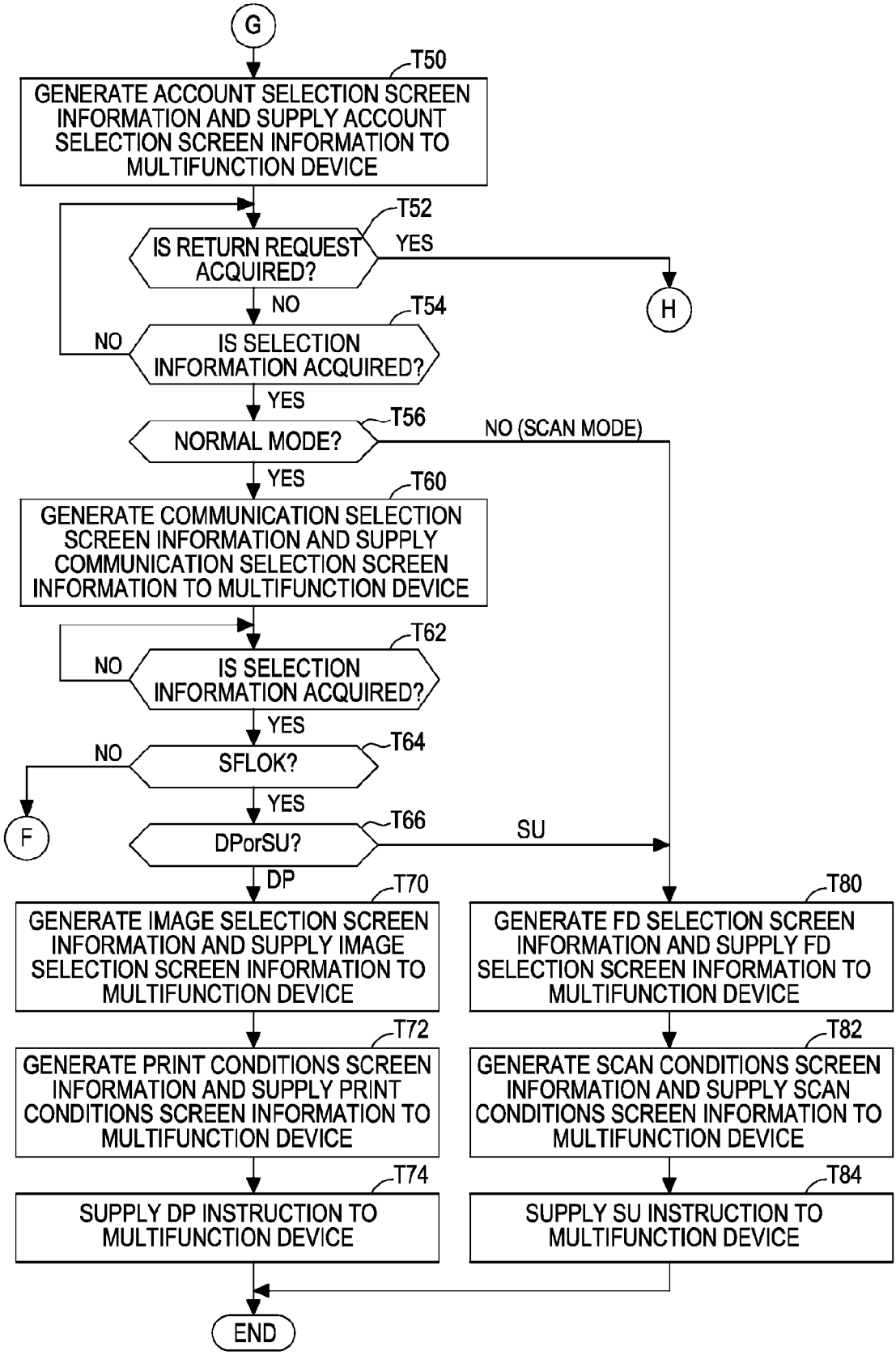

G
T50
GENERATE ACCOUNT SELECTION SCREEN INFORMATION AND SUPPLY ACCOUNT SELECTION SCREEN INFORMATION TO MULTIFUNCTION DEVICE
T52
IS RETURN REQUEST ACQUIRED?
YES
H
NO
T54
NO
IS SELECTION INFORMATION ACQUIRED?
YES
T56
NORMAL MODE?
NO (SCAN MODE)
YES
T60
GENERATE COMMUNICATION SELECTION SCREEN INFORMATION AND SUPPLY COMMUNICATION SELECTION SCREEN INFORMATION TO MULTIFUNCTION DEVICE
T62
NO
IS SELECTION INFORMATION ACQUIRED?
YES
T64
NO
SFLOK?
F
YES
T66
DPorSU?
SU
DP
T70
GENERATE IMAGE SELECTION SCREEN INFORMATION AND SUPPLY IMAGE SELECTION SCREEN INFORMATION TO MULTIFUNCTION DEVICE
T80
GENERATE FD SELECTION SCREEN INFORMATION AND SUPPLY FD SELECTION SCREEN INFORMATION TO MULTIFUNCTION DEVICE
T72
GENERATE PRINT CONDITIONS SCREEN INFORMATION AND SUPPLY PRINT CONDITIONS SCREEN INFORMATION TO MULTIFUNCTION DEVICE
T82
GENERATE SCAN CONDITIONS SCREEN INFORMATION AND SUPPLY SCAN CONDITIONS SCREEN INFORMATION TO MULTIFUNCTION DEVICE
T74
SUPPLY DP INSTRUCTION TO MULTIFUNCTION DEVICE
T84
SUPPLY SU INSTRUCTION TO MULTIFUNCTION DEVICE
END

FIG. 18

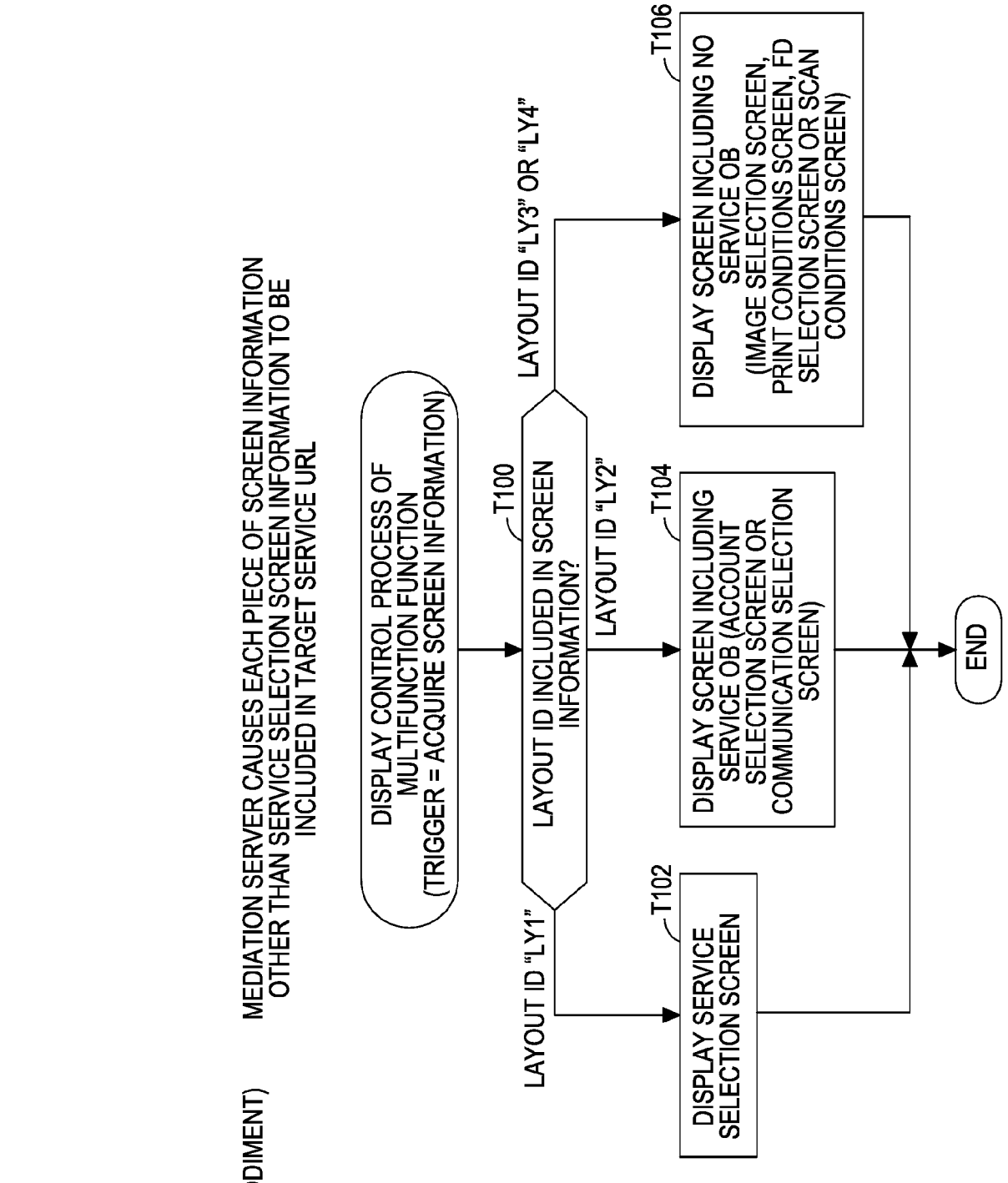

(SECOND EMBODIMENT)
MEDIATION SERVER CAUSES EACH PIECE OF SCREEN INFORMATION OTHER THAN SERVICE SELECTION SCREEN INFORMATION TO BE INCLUDED IN TARGET SERVICE URL
DISPLAY CONTROL PROCESS OF MULTIFUNCTION FUNCTION (TRIGGER = ACQUIRE SCREEN INFORMATION)
T100
LAYOUT ID INCLUDED IN SCREEN INFORMATION?
LAYOUT ID "LY1"
LAYOUT ID "LY2"
LAYOUT ID "LY3" OR "LY4"
T102
DISPLAY SERVICE SELECTION SCREEN
T104
DISPLAY SCREEN INCLUDING SERVICE OB (ACCOUNT SELECTION SCREEN OR COMMUNICATION SELECTION SCREEN)
T106
DISPLAY SCREEN INCLUDING NO SERVICE OB (IMAGE SELECTION SCREEN, PRINT CONDITIONS SCREEN, FD SELECTION SCREEN OR SCAN CONDITIONS SCREEN)
END

IMAGE PROCESSING DEVICE AND SCREEN INFORMATION SUPPLY SERVER

CROSS REFERENCE TO RELATED APPLICATION

This application is based upon and claims the benefit of priority of Japanese Patent Application No. 2013-267697 filed on Dec. 25, 2013 the contents of which are incorporated herein by reference in its entirety.

BACKGROUND

The present specification discloses an image processing device capable of performing an image processing and a screen information supply server for supplying a screen information to the image processing apparatus.

It is known a service linking system including a multifunction device and a relay device. When one of plural types of services is selected by a user, the multifunction device executes various communications with the relay device to receive the selected service from a service providing device. For example, the multifunction device sequentially acquires an album owner input UI display command and an album name selection UI display command from the relay device. Accordingly, the multifunction device sequentially displays an album owner input UI and an album name selection UI. Also, the user can execute each setting related to the selected service (for example, input of the album owner name or selection of the album name) in each UI.

SUMMARY

A configuration in which two or more screens including a plurality of options are displayed while being switched therebetween is not disclosed. In the present specification, a technology for enabling a user to easily select a desired option in a configuration in which two or more screens including a plurality of options are displayed while being switched therebetween is provided.

An aspect of the present disclosure provides the following arrangements:

An image processing device configured to communicate with a screen information supply server and execute image processing, the image processing device comprising:

a display unit; and

a control device configured to execute:

a screen information acquisition process of supplying a request for screen information to a screen information supply server and acquiring first screen information including K pieces of option information related to K options (K is an integer equal to or more than 2) from a screen information supply server when a predetermined instruction that is a trigger of execution of the image processing is given from a user to the image processing device;

a layout data acquisition process of acquiring layout data from a memory that stores layout data representing a layout of a screen to be displayed on the display unit;

a display control process of:

when the first screen information is acquired, causing the display unit to display a first screen including K1 options using K1 pieces of option information (K1 is an integer equal to or more than 1) and the layout data, the K1 pieces of option information being a part of the K pieces of option information included in the first screen information, and

when a screen change instruction is given from the user in a state in which the first screen is displayed on the display unit, causing the display unit to display a second screen including K2 options using K2 pieces of option information (K2 is an integer equal to or more than 1) and the layout data, the K2 pieces of option information being some of the K pieces of option information and different from the K1 pieces of option information; and

an image processing execution process of executing the image processing related to an object option when the target option among the K2 options is selected by the user in a state in which the second screen is displayed on the display unit,

wherein the screen information acquisition process further causes the image processing device to supply the request for the screen information to the screen information supply server and acquiring second screen information including the K pieces of option information from the screen information supply server when the predetermined instruction is given from the user to the image processing device again after the image processing related to the target option is executed, and

wherein the display control process further causes the image processing device to cause the display unit to display the second screen using the K2 pieces of option information among the K pieces of option information included in the second screen information and the layout data when the second screen information is acquired.

A screen information supply server configured to communicate with an image processing device, comprising:

a processor; and

memory storing a computer executable program, when executed by the processor, causing the screen information supply server to execute:

a screen information supply instruction of supplying first screen information including K pieces of option information related to K options to an image processing device when a first request is acquired from the image processing device in response to a first instruction that is a trigger of execution of image processing being given from a user to the image processing device, the first screen information includes:

first information for causing a display unit of the image processing device to sequentially display two or more screens including the K options;

second information for causing the display unit to first display a first screen of the two or more screens; and

third information for causing the display unit to display a second screen among the two or more screens when a screen change instruction is given from the user to the image processing device in a state in which the first screen is displayed on the display unit, the first screen including K1 options (K1 is an integer equal to or more than 1) that are some of the K options, the second screen including K2 options (K2 is an integer equal to or more than 1) that are a part of the K options, and the K2 options being different from the K1 options; and

a registration instruction of registering registration information indicating a target option in a database when first selection information indicating that the target option has been selected from among the K2 options by the user is acquired from the image processing device after the first screen information is supplied,

wherein the screen information supply instruction further causes the screen information supply server to supply second screen information including the K pieces of option information and instruction information to the image processing device using the registration information in the database when a second request is acquired from the image processing device in response to the first instruction being given from the

user to the image processing device again after the image processing device executes the image processing according to the first instruction,

wherein the second screen information is information for causing the display unit to sequentially display the two or more screens including the K options, and

wherein the instruction information in the second screen information is information for instructing the image processing device to first display the second screen among the two or more screens on the display unit.

A non-transitory computer readable recording medium storing a computer executable program for a screen information supply server configured to communicate with the image processing device, the computer program when executed by a computer of the screen information supply server, causing the screen information supply server to execute:

a screen information supply instruction of supplying screen information including K pieces of option information related to K options to the image processing device when a first request is acquired from the image processing device in response to a first instruction that is a trigger of execution of image processing being given from a user to the image processing device, the first screen information including first information for causing a display unit of the image processing device to sequentially display two or more screens including the K options, second information for causing the display unit to display a first screen of the two or more screens, and third information for causing the display unit to display a second screen among the two or more screens when a screen change instruction is given from the user to the image processing device in a state in which the first screen is displayed on the display unit, the first screen including K1 options (K1 is an integer equal to or more than 1) that are a part of the K options, the second screen including K2 options (K2 is an integer equal to or more than 1) that are a part of the K options, and the K2 options being different from the K1 options; and

a registration process of registering registration information indicating a target option in a database when first selection information indicating that the target option has been selected from among the K2 options by the user is acquired from the image processing device after the first screen information is supplied,

wherein the screen information supply process further includes supplying second screen information including the K pieces of option information and instruction information to the image processing device using the registration information in the database when a second request is acquired from the image processing device in response to the first instruction being given from the user to the image processing device again after the image processing device executes the image processing according to the first instruction,

wherein the second screen information is information for causing the display unit to sequentially display the two or more screens including the K options, and

wherein the instruction information in the second screen information is information for instructing the image processing device to display the second screen among the two or more screens on the display unit.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** illustrates a configuration of a communication system.

FIG. **2** illustrates an example of data in a multifunction device of a first embodiment.

FIG. **3** illustrates an example of data in the mediation server.

FIG. **4** illustrates each process when "Web" is selected in a main screen.

FIG. **5** illustrates each process when a determination result of target SFL information is OK.

FIG. **6** illustrates each process when download print (that is, DP) is selected.

FIG. **7** illustrates each process when scan upload (that is, SU) is selected.

FIG. **8** illustrates each process when "Scan" is selected in a main screen.

FIG. **9** illustrates each screen displayed in a multifunction device.

FIG. **10** illustrates each screen displayed in a multifunction device.

FIG. **11** illustrates each process when "Web" is selected in a main screen in a state in which a service name "SVE" is registered in a database server.

FIG. **12** illustrates each process when "Scan" is selected in the main screen in a state in which the service name "SVE" is registered in the database server.

FIG. **13** illustrates each process when "Scan" is selected in the main screen in a state in which a service name "SVB" is registered in the database server.

FIG. **14** illustrates each process when a back button is selected in an account selection screen.

FIG. **15** illustrates each process when a history is selected in a service selection screen.

FIG. **16** illustrates a flowchart of each process executed by a mediation server.

FIG. **17** illustrates a flowchart continued from FIG. **16**.

FIG. **18** illustrates a flowchart of each process executed by a multifunction device of a second embodiment.

DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

First Embodiment

(Configuration of System)

A communication system **2** includes a multifunction device **10**, a mediation server **50**, a database server (hereinafter referred to as a "DB server") **80**, and a plurality of service providing servers (hereinafter referred to as "an SP server") **100**, as illustrated in FIG. **1**. These devices **10**, **50**, **80**, and **100** are configured as separate entities.

(Configuration of Multifunction Device **10**)

The multifunction device **10** can execute multiple functions, including a print function, a scan function, a copy function, a FAX function, and the like. The multifunction device **10** is a device connected to a local area network (LAN) (not illustrated), and is a peripheral device of other devices (for example, a personal computer (PC)) connected to the LAN. The multifunction device **10** includes an operation unit **12**, a display unit **14**, a print execution unit **16**, a scan execution unit **18**, a network I/F **20**, and a control unit **30**.

The operation unit **12** includes a plurality of keys. A user can input various instructions to the multifunction device **10** by operating the operation unit **12**. The display unit **14** is a display for displaying various pieces of information. The display unit **14** functions as a so-called touch panel. That is, the display unit **14** also functions as an operation unit operated by the user. The print execution unit **16** includes a print mechanism in an ink-jet scheme, a laser scheme, or the like. The scan execution unit **18** includes a scan mechanism, such as a CCD or a CIS. The network I/F **20** is an interface for

connection to the LAN (not illustrated). The multifunction device **10** can access the Internet via the network I/F **20** (that is, via the LAN).

The control unit **30** includes a CPU **32** and a memory **34**. The CPU **32** executes various processes according to a program stored in the memory **34**. The memory **34** stores plural pieces of layout information **36**, a secure function lock (SFL) table **38**, and a service user table **40**, in addition to the program.

Each of plural pieces of layout information **36** is information in which a layout ID (for example, "LY**1**") and layout data are associated, as illustrated in FIG. **2**. The layout ID is identification information for identifying the layout data. The layout data is data indicating a layout of a screen to be displayed on the display unit **14**. The plural pieces of layout information **36** is stored in the memory **34** in advance in a shipment stage of the multifunction device **10**.

One or more pieces of SFL information are registered in the SFL table **38**. Each piece of SFL information is information in which a user name, a password, print permission information, and scan permission information are associated. The user name is identification information for identifying the user of the multifunction device **10**. The password is authentication information for authenticating the user. The print permission information indicates "OK" when the user is permitted to cause the multifunction device **10** to execute the print function, and indicates "NG" when the user is not permitted. The scan permission information indicates "OK" when the user is permitted to cause the multifunction device **10** to execute the scan function, and indicates "NG" when the user is not permitted. For example, a manager of the multifunction device **10** operates the operation unit **12** and registers each piece of SFL information for each user in the SFL table **38**.

One or more pieces of service user information are registered in the service user table **40**. Each piece of service user information is information in which a service name, an account name, a password, and a face ID are associated. The service name is a name of the service to be provided by each SP server **100** and, in other words, a server name of each SP server **100**. The account name is identification information for identifying a user of the SP server **100**. The password is authentication information for authenticating the user. The face ID is identification information for identifying a face object. Further, hereinafter, an object is referred to as an "OB."

For example, the user accesses any SP server **100** using any PC (not illustrated) and registers the account name and the password in the SP server **100**. Then, for example, the user accesses the multifunction device **10** using the PC (not illustrated) and registers the service name of the SP server **100**, the account name, the password, and the face ID in the service user table **40**. Accordingly, one piece of service user information is registered in the service user table **40**. Further, the user can access the mediation server **50** (that is, access each piece of image data in the face OB table **78** of FIG. **3** to be described below) using the PC (not illustrated) and display each face OB on the PC. Accordingly, the user can ascertain each face ID corresponding to each face OB and register a face ID corresponding to a desired face OB in the service user table **40**.

(Configuration of Mediation Server **50**)

The mediation server **50** of FIG. **1** is a server provided by the vendor of the multifunction device **10**. The mediation server **50** is a server that mediates provision of the service from each SP server **100** to the multifunction device **10**. Specifically, the mediation server **50** can execute communication with each SP server **100** according to each application program interface (API) corresponding to each SP server **100**.

The mediation server **50** includes a network I/F **60**, and a control unit **70**. The mediation server **50** can access the Internet via the network I/F **60**. The control unit **70** includes a CPU **72** and a memory **74**. The CPU **72** executes various processes according to a program stored in the memory **74**.

The program in the memory **74** includes a plurality of APIs corresponding to the plurality of SP servers **100**. Each of the plurality of APIs is a program for communicating with the SP server corresponding to the API and executing data processing. The memory **74** stores a service OB table **76** and a face OB table **78**, in addition to the program. The information within the respective tables **76** and **78** is registered by the manager of the mediation server **50** (that is, the vendor of the multifunction device **10**) in advance.

Plural pieces of service OB information, and history OB information (that is, information in a bottom column of FIG. **3**) are registered in the service OB table **76**, as illustrated in FIG. **3**. Each piece of service OB information is information in which a uniform resource locator (URL), a service name, and image data are associated. The service name is a name of the service provided by each SP server **100**. The URL is locational information indicating a location (that is, a location within the mediation server **50**) of the image data indicating the service OB. The image data is data indicating the service OB (that is, an image indicating the service).

The history OB information is information in which a URL, a service name, and image data are associated, as well. However, the history OB information is information not related to each service provided by each SP server **100**, and is information related to a history supply service that can be provided by the mediation server **50**. The history supply service is a service for supplying history information indicating the service of the SP server supported by a device sold by a vendor of the multifunction device **10** and a time when the service of the SP server is supported, to the device.

Plural pieces of face OB information are registered in the face OB table **78**. Each piece of face OB information is information in which a URL, a face ID, and image data are associated. The URL is locational information indicating a location of image data indicating the face OB (that is, a location within the mediation server **50**). The face ID is identification information for identifying the face OB (that is, an image representing the face). The image data is data indicating the face OB.

(Configuration of DB Server **80**)

The DB server **80** of FIG. **1** is a server provided by the vendor of the multifunction device **10**. The DB server **80** can communicate with the mediation server **50** through the Internet. The DB server **80** stores the selected service table **82**. Information in the selected service table **82** is registered according to an instruction from the mediation server **50**.

Plural pieces of selected service information are registered in the selected service table **82**. Each selected service information is information in which an MAC address and a service name are associated. The MAC address is identification information assigned to the multifunction device (for example, **10**) in advance. In this embodiment, the MAC address of the multifunction device **10** is "M**1**." The service name is a service name selected in the past by the user of the multifunction device.

(Configuration of the SP Server **100**)

The plurality of SP servers **100** are, for example, servers (that is, cloud servers) having respective service names such as "Evernote (registered trademark)," "Google (registered trademark) Docs," "PICASA (registered trademark)," and

"Facebook (registered trademark)." Each SP server **100** provides the service corresponding to the SP server to the communication device (for example, the multifunction device **10**) through the Internet. Each SP server **100** can provide various services to the communication device by executing various functions. For example, there is an SP server that can execute a function of acquiring image data from the communication device and storing the image data (hereinafter referred to as an "image data storage function"), and there is an SP server that can execute a function of supplying image data to the communication device (hereinafter referred to as an "image data supplying function"). In this embodiment, all of the plurality of SP servers **100** for which the mediation server **50** can mediate provision of the services can execute the image data supplying function. However, only some of the plurality of SP servers **100** can execute the image data storage function.

(Each Process Executed by Respective Devices **10** and **50** or the Like; FIG. **4**)

In this embodiment, it is assumed that the multifunction device **10** receives a service from the service providing server **100** for executing download print or scan upload. The download print is downloading image data from the service providing server **100** and executing printing of an image represented by the image data. In this case, the service providing server **100** executes the image data supplying function. Further, the scan upload is generating the image data through scanning of a document and uploading the image data to the service providing server **100**. In this case, the service providing server **100** executes the image data storage function. Hereinafter, the download print and the scan upload may be referred to as "DP" (Download Print) and "SU" (Scan Upload).

As illustrated in FIG. **4**, the user inputs a user ID "U**1**" and a password "PU**1**" to the multifunction device **10** in S**10**. Further, the user may operate the operation unit **12** to input information to the multifunction device **10** or may input information to the multifunction device **10** using the touch panel of the display unit **14**. Hereinafter, the operation of the user may also be executed by either the operation unit **12** or the touch panel of the display unit **14**.

In S**12**, the CPU **32** of the multifunction device **10** supplies the display data stored in the memory **34** in advance to the display unit **14** and causes the display unit **14** to display a main screen SC**1** of FIG. **9**. The main screen SC**1** includes an object indicating "Web" and an object indicating "Scan." The object indicating "Web" is an object indicating execution of connection to the Internet. The object indicating "Scan" is an object indicating execution of the scan function. Further, the main screen SC**1** may include other objects indicating execution of other functions (for example, an object indicating "Copy" and an object indicating "FAX").

In S**14** of FIG. **4**, the user selects the object indicating "Web" in the main screen SC**1**. In this case, the CPU **32** of the multifunction device **10** supplies an initial request to the mediation server **50** in S**16**. The initial request is a command for requesting screen information related to the connection to the Internet. The initial request includes an MAC address "M**1**" of the multifunction device **10**, normal mode information, and target SFL information. The normal mode information is information included in the initial request when the object indicating "Web" is selected in the main screen SC**1**. The target SFL information is information (for example, print permission information "OK" and scan permission information "OK") associated with the user ID "U**1**" and the password "PU**1**" input in S**10** among the one or more pieces of SFL information registered in the SFL table **38** within the memory **34** (see FIG. **2**).

When the CPU **72** of the mediation server **50** acquires the initial request from the multifunction device **10**, the CPU **72** supplies an information request including the MAC address "M**1**" within the initial request to the DB server **80** in S**22**.

When the DB server **80** acquires the information request from the mediation server **50**, the DB server **80** determines whether the MAC address "M**1**" within the information request is registered in the selected service table **82** (see FIG. **1**). In the example of FIG. **4**, the DB server **80** determines that the MAC address "M**1**" is not registered and, as a result, supplies a response indicating "No registration" to the mediation server **50** in S**24**.

When the CPU **72** of the mediation server **50** acquires the response from the DB server **80**, the CPU **72** acquires each piece of service OB information and the history OB information from the service OB table **76** (see FIG. **3**) within the memory **74** in S**30**. Also, the CPU **72** generates service selection screen information in S**32**. Then, the CPU **72** supplies the service selection screen information to the multifunction device **10** in S**34**. The service selection screen information is information for causing the multifunction device **10** to display two or more service selection screens (see SC**2** and SC**3** in FIG. **9**), and is specifically generated as follows.

The CPU **72** of the mediation server **50** first generates the table of FIG. **4**. In this table, a service name, a URL and a flag are associated. The CPU **72** describes each service name and each URL included in each piece of service OB information in the table in the same order as the arrangement order of the respective pieces of service OB information within the service OB table **76** (see FIG. **3**). Then, the CPU **72** describes the service name "history" and the URL "UH" included in the history OB information in the table (that is, describes them in the bottom column). Also, the CPU **72** describes "ON" as a flag in a top column of the tables since the response of S**24** indicates "No registration." The flag "ON" is information associated with only any one service name within the table, and is information for instructing the multifunction device **10** to first display a screen including the service name. Further, when the response of S**24** indicates the service name rather than "No registration," the CPU **72** describes the flag "ON" in association with the service name. Further, the CPU **72** understands the plurality of layout IDs "LY**1**" to "LY**4**" (see FIG. **2**) used in the multifunction device **10** in advance, and determines one layout ID "LY**1**" among these layout IDs. Accordingly, the CPU **72** can generate service selection screen information including the table of FIG. **4** and the layout ID "LY**1**."

When the CPU **32** of the multifunction device **10** acquires the service selection screen information from the mediation server **50**, the CPU **32** supplies an image data request including six URLs within the service selection screen information to the mediation server **50** in S**40**.

When the CPU **72** of the mediation server **50** acquires the image data request from the multifunction device **10**, the CPU **72** acquires the six pieces of image data identified by the six URLs within the image data request from the service OB table **76** (see FIG. **3**). Also, the CPU **72** supplies the six pieces of image data to the multifunction device **10** in S**42**.

When the CPU **32** of the multifunction device **10** acquires the six pieces of image data from the mediation server **50**, the CPU **32** generates two pieces of display data indicating two service selection screens (see SC**2** and SC**3** in FIG. **9**) in S**50**. Specifically, the CPU **32** acquires layout data identified by the layout ID "LY**1**" within the service selection screen information from among the plural pieces of layout information **36** in the memory **34**. Since the acquired layout data includes three areas A**1** to A**3** (see FIG. **2**), the CPU **32** acquires three service names "SVA," "SVB" and "SVC" sequentially from the top

column of the table within the service selection screen information and adds the three service names below the three areas A1 to A3. The CPU **32** also adds the three pieces of image data corresponding to the three service names among the six pieces of acquired image data to the three areas A1 to A3. Accordingly, the first display data is completed.

Similarly, the CPU **32** generates second display data using the same layout data as the acquired layout data. That is, the CPU **32** acquires three remaining service names "SVD," "SVE" and "history" from the table within the service selection screen information, adds the three service names below the three areas A1 to A3 and also adds the three pieces of remaining image data among the six pieces of acquired image data to the three areas A1 to A3. Accordingly, the second display data is completed.

Since the flag "ON" is described in association with the service name "SVA" in the table within the service selection screen information, the CPU **32** determines that a service selection screen including the service name "SVA" is to be displayed first. As a result, the CPU **32** first supplies the first display data to the display unit **14**, and causes the display unit **14** to display a service selection screen SC**2** of FIG. **9**. The service selection screen SC**2** includes three service OBs indicating figures "A" and the like, three service names indicating "SVA" and the like, and screen change buttons.

In S**52** of FIG. **4**, the user selects the screen change button in the service selection screen SC**2**. In this case, the CPU **32** of the multifunction device **10** supplies the second display data to the display unit **14** and causes the display unit **14** to display a service selection screen SC**3** of FIG. **9** in S**54**. The service selection screen SC**3** includes two service OBs indicating a figure "D" and the like, one history OB indicating a figure "History," three service names, and a screen change button. When the user selects the screen change button in the service selection screen SC**3**, the CPU **32** supplies the first display data to the display unit **14** again and causes the display unit **14** to display the service selection screen SC**2** again.

In this embodiment, the mediation server **50** supplies the service selection screen information including the layout ID "LY**1**" and the plurality of service names to the multifunction device **10**, as described above (see S**34**). Accordingly, the multifunction device **10** displays the service selection screens SC**2** and SC**3** using the layout data identified by the layout ID "LY**1**." Alternatively, for example, it is assumed that the mediation server **50** adopts a configuration in which display data indicating the service selection screen (for example, the first and second display data generated by the multifunction device **10** in S**50**) is generated and the display data is supplied to the multifunction device **10** (hereinafter referred to as a "configuration of a comparative example").

In the configuration of the comparative example, since the layout data in the multifunction device **10** includes the three areas A1 to A3, the mediation server **50**, for example, should generate the first display data indicating one service selection screen (for example, SC**2**) including three service OBs and supply the first display data to the multifunction device **10**. Further, for example, a situation in which there is a multifunction device that is a model different from the multifunction device **10** (hereinafter referred to as a "specific multifunction device"), and in the specific multifunction device, the layout data identified by the layout ID "LY**1**" includes four areas is assumed. In this case, the mediation server **50** should generate display data indicating one service selection screen including four service OBs, and supply the display data to the specific multifunction device. Thus, in the configuration of the comparative example, since it is necessary for the mediation server **50** to generate different display data according to the model of the multifunction device, a load on the mediation server **50** is high. On the other hand, in this embodiment, the mediation server **50** may supply the same service selection screen information to the multifunction device **10** and the specific multifunction device. Accordingly, for example, the multifunction device **10** generates display data indicating one service selection screen SC**2** including three service OBs, and the specific multifunction device generates display data indicating one service selection screen including four service OBs. That is, the mediation server **50** does not generate different display data according to the model of the multifunction device. Therefore, the load on the mediation server **50** is lower than that in the configuration of the comparative example.

In S**56** of FIG. **4**, the user selects a service having the service name "SVE" by selecting the service OB indicating the figure "E" in the service selection screen SC**3**. Further, the service name (that is, "SVE") selected in S**56**, the service having the service name, and the SP server providing the service are hereinafter referred to as a "target service name," a "target service," and a "target SP server," respectively. In S**58**, the CPU **32** of the multifunction device **10** supplies selection information including the target service name "SVE" to the mediation server **50**.

In S**60**, the CPU **72** of the mediation server **50** executes a determination of the target SFL information acquired in S**16** and determines "OK" or "NG" as a determination result. The determination result "OK" of S**60** means that the multifunction device **10** can execute at least one of the download print (that is, the DP) and the scan upload (that is, SU) based on the target SFL information and the target service. Further, the determination result "NG" of S**60** means that the multifunction device **10** can execute neither the DP nor the SU. When either the print permission information or the scan permission information within the target SFL information indicates "NG," the CPU **72** determines "NG" as a determination result.

As described above, the plurality of SP servers **100** can all execute the image data supplying function in this embodiment, whereas only some of the plurality of SP servers **100** can execute the image data storage function. Therefore, the target SP server **100** is capable of executing at least the image data supplying function. When the print permission information within the target SFL information indicates "OK," the CPU **72** determines "OK" as a determination result. This is because the user is allowed to execute the print function and the target SP server **100** is capable of executing at least the image data supplying function, and thus, the multifunction device **10** can execute at least the DP.

Further, when the print permission information within the target SFL information is "NG" and the scan permission information within the target SFL information is "OK," the CPU **72** determines whether the object SP server **100** is capable of executing the image data storage function. The determination is executed based on information (not illustrated) on each SP server **100** stored in the memory **74** in advance. When the CPU **72** determines that the target SP server can execute the image data storage function, the CPU **72** determines "OK" as a determination result. This is because the user is allowed to execute the scan function and the target SP server **100** is capable of executing the image data storage function, and thus, the multifunction device **10** can execute the SU. On the other hand, when the CPU **72** determines that the target SP server is incapable of executing the image data storage function, the CPU **72** determines "NG" as a determination result.

When the CPU **72** of the mediation server **50** determines "NG" as the determination result of S**60**, the CPU **72** supplies error information to the multifunction device **10** in S**62**. In this case, the CPU **72** ends the process according to the initial request of S**16** without supplying each piece of screen information to be described below (see, for example, S**82** and S**106** of FIG. **5**) to the multifunction device **10**.

When the CPU **32** of the multifunction device **10** acquires the error information from the mediation server **50**, the CPU **32** supplies display data stored in the memory **34** in advance to the display unit **14** and causes the display unit **14** to display an error screen SCE of FIG. **9** in S**64**. Accordingly, the user can understand that it is not possible to cause the multifunction device **10** to execute the DP or the SU.

(Case in which Determination Result of S**60** of FIG. **4** is "OK"; FIG. **5**)

As illustrated in FIG. **5**, when the CPU **72** of the mediation server **50** determines "OK" as a determination result of S**60** of FIG. **4**, the CPU **72** of the mediation server **50** supplies a registration request to the DB server **80** in S**70**. The registration request includes the MAC address "M**1**" of the multifunction device **10**, and the target service name "SVE."

When the DB server **80** acquires the registration request from the mediation server **50**, the DB server **80** determines whether the MAC address "M**1**" within the registration request is registered in the selected service table **82** (see FIG. **1**). When the DB server **80** determines that the MAC address "M**1**" is not registered, the DB server **80** registers new selection information in the selected service table **82** in S**72**. The new selection information is information in which the MAC address "M**1**" and the target service name "SVE" are associated. Further, when the DB server **80** determines that the MAC address "M**1**" is registered, the DB server **80** describes the target service name "SVE" in the selected service table **82** in place of a service name associated with the MAC address "M**1**" in S**72**.

In S**74**, the CPU **72** of the mediation server **50** supplies an account information request including the target service name "SVE" to the multifunction device **10**.

When the CPU **32** of the multifunction device **10** acquires the account information request from the mediation server **50**, the CPU **32** acquires one or more pieces of account information (that is, an account name, a password, and a face ID) associated with the target service name "SVE" within the account information request from the service user table **40** (see FIG. **2**). Also, the CPU **32** supplies the one or more pieces of acquired account information to the mediation server **50** in S**76**.

When the CPU **72** of the mediation server **50** acquires the one or more pieces of account information from the multifunction device **10**, the CPU **72** generates account selection screen information in S**80**. Then, the CPU **72** supplies the account selection screen information to the multifunction device **10** in S**82**. The account selection screen information is information for causing the multifunction device **10** to display an account selection screen (see SC**4** of FIG. **9**) and is specifically generated as follows.

The CPU **72** of the mediation server **50** first generates a table of FIG. **5**. In this table, the account name and the URL are associated. The CPU **72** executes the following process using one of the one or more pieces of account information to generate the table. That is, the CPU **72** acquires a URL associated with the face ID within the one piece of account information from the face OB table **78** (see FIG. **3**). Also, the CPU **72** describes the account name and the acquired URL within the one piece of account information in the table in association with each other. The CPU **72** similarly executes the process for other account information. Accordingly, the table of FIG. **5** is completed. Further, the CPU **72** acquires an URL "USE" associated with the target service name "SVE" (hereinafter referred to as a "target service URL") from the service OB table **76** (see FIG. **3**). Further, the CPU **72** determines one layout ID "LY**2**" (see FIG. **2**). Accordingly, the CPU **72** can generate the account selection screen information including the table of FIG. **5**, the target service URL "USE," and the layout ID "LY**2**."

When the CPU **32** of the multifunction device **10** acquires the account selection screen information from the mediation server **50**, the CPU **32** supplies an image data request including three URLs "UF**1**", "UF**2**," and "USE" within the account selection screen information to the mediation server **50** in S**90**.

When the CPU **72** of the mediation server **50** acquires the image data request from the multifunction device **10**, the CPU **72** acquires three pieces of image data identified by the three URLs "UF**1**" "UF**2**," and "USE" within the image data request from the service OB table **76** and the face OB table **78** (see FIG. **3**). Also, the CPU **72** supplies the three pieces of image data to the multifunction device **10** in S**92**.

When the CPU **32** of the multifunction device **10** acquires the three pieces of image data from the mediation server **50**, the CPU **32** generates display data indicating the account selection screen (see SC**4** of FIG. **9**) in S**94**. Specifically, the CPU **32** acquires the layout data identified by the layout ID "LY**2**" from the memory **34**. The acquired layout data includes a plurality of areas A**4**, A**5**, and A**6**, as illustrated in FIG. **2**. The CPU **32** describes two account names "AN**1**" and "AN**2**" included in the table within the account selection screen information in the two areas A**4** and A**5**. The CPU **32** also describes two pieces of image data indicating the face OB among the three pieces of acquired image data in the two areas A**4** and A**5**. Further, the CPU **32** describes one piece of image data indicating the service OB among the three pieces of acquired image data in the area A**6**. Accordingly, the display data is completed. The CPU **32** supplies the display data to the display unit **14** and causes the display unit **14** to display the account selection screen SC**4** of FIG. **9**. In this example, the account selection screen SC**4** includes two face OBs, two account names, the service OB, and the back button.

In S**96** of FIG. **5**, the user selects the account name "AN**2**" corresponding to the user in the account selection screen SC**4**. Since the account selection screen SC**4** includes the service OB corresponding to the target service, the user can easily understand the target service when viewing the account selection screen SC**4**. Therefore, the user can appropriately select the user's account name "AN**2**" for receiving the target service. Further, since each face OB is arranged near each account name in the account selection screen SC**4**, the user can appropriately select the user's account name "AN**2**" which is arranged near the user's face OB.

In S**98**, the CPU **32** of the multifunction device **10** supplies selection information including the target account name "AN**2**," the target password "PN**2**," the target face URL "UF**2**," and the target service URL "USE" to the mediation server **50**. The target account name "AN**2**" is an account name selected in S**96**. The target password "PN**2**" is a password associated with target account name "PN**2**" in the service user table **40** (see FIG. **2**). The target face URL "UF**2**" is a URL associated with the target account name "PN**2**" in the table of FIG. **5** within the account selection screen information.

When the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** generates communication selection screen information in S**102**. Then, the CPU **72** supplies the communication

selection screen information to the multifunction device **10** in S**106**. The communication selection screen information is information for causing the display unit **14** of the multifunction device **10** to display a communication selection screen (see SC**5** of FIG. **9**) and, specifically, is generated as follows.

The CPU **72** of the mediation server **50** determines one layout ID "LY**2**" (see FIG. **2**). Also, the CPU **72** generates communication selection screen information including at least a character string "Download Print" indicating the DP, the target face URL "UF**2**" within the selection information of S**98**, the target service URL "USE" within the selection information of S**98**, and the layout ID "LY**2**." Further, when the target SP server **100** is capable of executing the image data storage function, the CPU **72** generates communication selection screen information further including a character string "Scan Upload" indicating the SU. However, when the target SP server **100** is incapable of executing the image data storage function, the CPU **72** generates communication selection screen information not including character string "Scan Upload" indicating the SU. This is because the target SP server **100** is incapable of executing the image data storage function, and thus, the multifunction device **10** is incapable of executing the SU.

When the CPU **32** of the multifunction device **10** acquires the communication selection screen information from the mediation server **50**, the CPU **32** supplies a combined data request including two URLs "UF**2**" and "USE" within the communication selection screen information to the mediation server **50** in S**110**.

When the CPU **72** of the mediation server **50** acquires the combined data request from the multifunction device **10**, the CPU **72** acquires two pieces of image data identified by the two URLs "UF**2**" and "USE" within the combined data request from the service OB table **76** and the face OB table **78** (see FIG. **3**). Also, the CPU **72** generates the combined data indicating a combined OB by combining the two pieces of image data. Then, the CPU **72** supplies the combined data to the multifunction device **10** in S**112**.

When the CPU **32** of the multifunction device **10** acquires the combined data from the mediation server **50**, the CPU **32** generates display data indicating the communication selection screen (see SC**5** of FIG. **9**) in S**114**. Specifically, the CPU **32** acquires the layout data (see FIG. **2**) identified by the layout ID "LY**2**" from the memory **34**. The CPU **32** describes a character string "Download Print" within the communication selection screen information in the area A**4**. Further, when a character string "Scan Upload" is included in the communication selection screen information, the CPU **32** describes the character string "Scan Upload" in the area A**5**. However, when the character string "Scan Upload" is not included in the communication selection screen information, the CPU **32** describes no character string in the area A**5**. Further, the CPU **32** describes the acquired combined data in the area A**6**. Accordingly, the display data is completed. The CPU **32** supplies the display data to the display unit **14** and causes the display unit **14** to display the communication selection screen SC**5** of FIG. **9**. The communication selection screen SC**5** includes the character string "Download Print," the character string "Scan Upload," the combined OB, and the back button. The communication selection screen SC**5** is a screen for selecting any one of image data downloading communication and image data uploading communication.

In S**116** of FIG. **5**, the user selects the DP or the SU in the communication selection screen SC**5**. Hereinafter, communication (that is, the DP or the SU) selected in the communication selection screen SC**5** is referred to as "target communication." Since the communication selection screen SC**5** includes the combined OB, and the combined OB includes the service OB corresponding to the target service (see FIG. **9**), the user can easily understand the target service when viewing the communication selection screen SC**5**. Therefore, the user can select the target communication while recognizing the target service. Further, the user can confirm that the face OB included in the combined OB is the face OB of the user. That is, the user can confirm whether the target account name "AN**2**" of the user is selected in the account selection screen SC**4** (see FIG. **9**). When the DP is selected in the communication selection screen SC**5**, each process of FIG. **6** is executed, and when the SU is selected, each process of FIG. **7** is executed.

(Case in which DP is Selected in S**116** of FIG. **5**; FIG. **6**)

When the DP is selected in S**116** of FIG. **5**, the CPU **32** of the multifunction device **10** supplies selection information indicating the DP as the target communication to the mediation server **50** in S**120**, as illustrated in FIG. **6**.

When the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** executes a determination of the target SFL information (see S**16** of FIG. **4**) and determines "OK" or "NG" as a determination result in S**130**. The determination result of S**130** indicates whether the multifunction device **10** is capable of executing the DP based on the target SFL information. When the print permission information within the target SFL information indicates "NG," the CPU **72** determines "NG" as a determination result. In this case, although not illustrated, the CPU **72** supplies error information for causing display of an error screen SCE of FIG. **9** to the multifunction device **10**. That is, the CPU **72** ends the process according to the initial request of S**16** in FIG. **4** without supplying each piece of screen information to be described below (see, for example, S**142** and S**172**) to the multifunction device **10**. On the other hand, when the print permission information within the target SFL information indicates "OK," the CPU **72** determines "OK" as a determination result. In this case, the CPU **72** supplies a thumbnail URL request including the target account name "AN**2**" and the target password "PN**2**" (see S**98** of FIG. **5**) to the target SP server **100** in S**132**.

When the target SP server **100** acquires the thumbnail URL request from the mediation server **50**, the target SP server **100** executes authentication using the target account name "AN**2**" and the target password "PN**2**" within the thumbnail URL request. Further, when the mediation server **50** or the multifunction device **10** supplies a request (for example, S**150** of FIG. **6** and S**232** of FIG. **7**) to the SP server **100**, the object account name "AN**2**" and the object password "PN**2**" are included in the request, and the authentication is executed by the object SP server **100**. However, a description of the authentication will be hereinafter omitted. When the authentication succeeds, the target SP server **100** supplies X URLs indicating locations of X pieces of thumbnail image data (X is an integer equal to or more than 1) to the mediation server **50** in S**134**. The X pieces of thumbnail image data are obtained by reducing X pieces of image data stored in the target SP server **100** in association with the target account name "AN**2**."

When the CPU **72** of the mediation server **50** acquires the X URLs from the SP server **100**, the CPU **72** generates image selection screen information in S**140**. The image selection screen information is information for causing the multifunction device **10** to display an image selection screen (see SC**7** of FIG. **10**). Specifically, the CPU **72** determines one layout ID "LY**3**" (see FIG. **2**) and generates image selection screen information including the X URLs of S**134** and the layout ID "LY**3**." However, the layout data identified by the layout ID "LY**3**" includes the areas A**7** to A**9** (see FIG. **2**) for displaying

thumbnail images, but does not include an area for displaying the service OB corresponding to the target service name "SVE." Thus, since there is no space for displaying the service OB, the CPU **72** generates image selection screen information not including the target service URL "USE." Then, the CPU **72** supplies the image selection screen information to the multifunction device **10** in S**142**.

When the CPU **32** of the multifunction device **10** acquires the image selection screen information from the mediation server **50**, the CPU **32** supplies an image data request including X URLs within the image selection screen information to the target SP server **100** in S**150**.

When the target SP server **100** acquires the image data request from the multifunction device **10**, the target SP server **100** supplies X pieces of image information to the multifunction device **10** in S**152**. Each of the X pieces of image information is information in which the thumbnail image data and the image ID are associated. The thumbnail image data is data identified by the URL within the image data request. The image ID is identification information for identifying original image data of the thumbnail image data.

When the CPU **32** of the multifunction device **10** acquires the X pieces of image information from the target SP server **100**, the CPU **32** generates display data indicating the image selection screen (see SC**7** of FIG. **10**) in S**154**. Specifically, the CPU **32** first acquires layout data (see FIG. **2**) identified by the layout ID "LY**3**" from the memory **34**. The acquired layout data includes the three areas A**7** to A**9**, as illustrated in FIG. **2**. The CPU **32** adds the respective thumbnail image data within the X pieces of image information to the respective areas A**7** to A**9**. Accordingly, the display data is completed. The CPU **32** supplies the display data to the display unit **14** and causes the display unit **14** to display the image selection screen SC**7** of FIG. **10**. In the example of FIG. **10**, the image selection screen SC**7** includes three thumbnail images indicating figures, such as a star.

In S**156** of FIG. **6**, the user selects a desired thumbnail image (for example, the figure of the star) in the image selection screen SC**7**. In this case, the CPU **32** of the multifunction device **10** supplies the selection information including an image ID "IDI**1**" to the mediation server **50** in S**158**. The image ID "IDI**1**" is an image ID associated with the thumbnail image data indicating the thumbnail image selected by the user among the X image IDs included in the X pieces of image information of S**152**.

When the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** supplies a DL (Download) URL request including the image ID "IDI**1**" within the selection information to the target SP server **100** in S**160**.

When the target SP server **100** acquires the DLURL request from the mediation server **50**, the target SP server **100** supplies the DLURL to the mediation server **50** in S**162**. The DLURL is a URL indicating a location of image data identified by the image ID "IDI**1**", that is, a location of the image data which is a download target.

In S**170**, the CPU **72** of the mediation server **50** generates print conditions screen information. The print conditions screen information is information for causing the display unit **14** of the multifunction device **10** to display a print conditions screen (see SC**8** of FIG. **10**). Specifically, the CPU **72** determines one layout ID "LY**4**" (see FIG. **2**), and generates print conditions screen information including respective character strings indicating respective items (that is, image quality, paper, and size) of the print conditions, each option of each item, and the layout ID "LY**4**." However, the layout data (see FIG. **2**) identified by the layout ID "LY**4**" does not include an area for displaying a service OB corresponding to the target service name "SVE." Therefore, the CPU **72** generates the print conditions screen information not including the target service URL "USE." Then, the CPU **72** supplies the print conditions screen information to the multifunction device **10** in S**172**.

When the CPU **32** of the multifunction device **10** acquires the print conditions screen information from the target SP server **100**, the CPU **32** generates display data indicating the print conditions screen (see SC**8** of FIG. **10**) in S**174**. Specifically, the CPU **32** first acquires the layout data (see FIG. **2**) identified by the layout ID "LY**4**" from the memory **34**. The acquired layout data includes the two areas A**10** and A**11**, as illustrated in FIG. **2**. The CPU **32** describes each character string within the print conditions screen information in the area A**10** and describes each option within the print conditions screen information in the area A**11**. Accordingly, the display data is completed. The CPU **32** supplies the display data to the display unit **14** and causes the display unit **14** to display the print conditions screen SC**8** of FIG. **10**.

In S**176** of FIG. **6**, the user selects desired print conditions in the print conditions screen SC**8**. Further, for an item "Image quality," either "Fine" or "Normal" can be selected. For an item "Paper," one of a plurality of paper types, including "Common paper" and "Glossy paper," can be selected. For an item "size," one of a plurality of paper sizes, including "A**4**" and "B**4**," can be selected. In S**178**, the CPU **32** of the multifunction device **10** supplies selection information including the selected print conditions to the mediation server **50**.

When the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** supplies a DP instruction to the multifunction device **10** in S**180**. The DP instruction includes the DLURL of S**162** and the print conditions within the selection information of S**178**. The DP instruction is a command to instruct the multifunction device **10** to download the image data identified by the DLURL and to print the image indicated by the image data according to the print conditions.

When the CPU **32** of the multifunction device **10** acquires the DP instruction from the mediation server **50**, the CPU **32** supplies a DL request including the DLURL within the DP instruction to the target SP server **100** in S**190**.

When the target SP server **100** acquires the DL request from the multifunction device **10**, the target SP server **100** supplies the image data identified by the DLURL within the DL request to the multifunction device **10** in S**192**. That is, the target SP server **100** executes the image data supplying function.

When the CPU **32** of the multifunction device **10** acquires (that is, downloads) the image data from the target SP server **100**, the CPU **32** causes the print execution unit **16** to execute printing of the image represented by the acquired image data in S**194**. Specifically, the CPU **32** executes image processing for printing for the acquired image data using the print conditions within the DP instruction of S**180** and generates print data. The image processing for printing includes half tone processing for the acquired image data that is RGB image data having a number of gradations (for example, 256 gradations). Accordingly, print data having relatively less gradations (for example, ON or OFF of a dot) is generated. Further, the image processing for printing includes generating print data having high definition when "Image quality" included in the print conditions indicates "Fine," and includes generating print data having low resolution when "Image quality" included in the print conditions indicates "Normal." Further, the image processing for printing includes generating print

data suitable for an aspect ratio corresponding to the "Size" included in the print conditions. Also, the CPU **32** instructs the print execution unit **16** to convey the print paper of a type indicated by "Paper" included in the print conditions, and supplies the generated print data to the print execution unit **16**. Accordingly, the print execution unit **16** executes printing for the print paper according to the print data. As a result, the user can acquire print paper in which an image represented by the image data stored in the target SP server **100** (for example, an image corresponding to a thumbnail image indicating a figure of a star selected in S**156**) has been printed.

(Case in which SU is Selected in S**116** of FIG. **5**; FIG. **7**)

When the SU is selected in S**116** of FIG. **5**, the CPU **32** of the multifunction device **10** supplies the selection information indicating the SU as a target communication to the mediation server **50** in S**220**, as illustrated in FIG. **7**.

When the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** executes a determination of the target SFL information (see S**16** of FIG. **4**) and determines "OK" or "NG" as a determination result in S**230**. The determination result of S**230** indicates whether the multifunction device **10** is capable of executing the SU. When the scan permission information within the target SFL information indicates "NG," the CPU **72** determines "NG" as a determination result. In this case, although not illustrated, the CPU **72** supplies error information for causing display of an error screen SCE of FIG. **9** to the multifunction device **10**. That is, the CPU **72** ends the process according to the initial request of S**16** of FIG. **4** without supplying each piece of screen information to be described below (see, for example, S**242** and S**272**) to the multifunction device **10**. On the other hand, when the scan permission information within the target SFL information indicates "OK," the CPU **72** determines "OK" as a determination result. In this case, the CPU **72** supplies an FD (Folder) information request including the target account name "AN**2**" and the target password "PN**2**" (see S**98** of FIG. **5**) to the target SP server **100** in S**232**.

When the target SP server **100** acquires the FD information request from the mediation server **50**, the target SP server **100** supplies Y pieces of FD information to the mediation server **50** in S**234**. The Y pieces of FD information are information on Y folders (that is, a folder name and a folder ID) stored in the target SP server **100** in association with the target account name "AN**2**."

When the CPU **72** of the mediation server **50** acquires the Y pieces of folder information from the SP server **100**, the CPU **72** generates FD selection screen information in S**240**. The FD selection screen information is information for causing the multifunction device **10** to display the FD selection screen (see SC**9** of FIG. **10**). Specifically, the CPU **72** determines one layout ID "LY**3**" (see FIG. **2**) and generates FD selection screen information including the Y pieces of folder information of S**234** and the layout ID "LY**3**." The FD selection screen information does not include the target service URL "USE." Then, the CPU **72** supplies the FD selection screen information to the multifunction device **10** in S**242**.

In S**254**, when the CPU **32** of the multifunction device **10** acquires the FD selection screen information from the mediation server **50**, the CPU **32** generates display data indicating the FD selection screen (see SC**9** of FIG. **10**). Specifically, the CPU **32** acquires the layout data (see FIG. **2**) identified by the layout ID "LY**3**" from the memory **34**. The CPU **32** adds the respective folder names included in the respective pieces of FD information within the FD selection screen information to the respective areas A**7** to A**9**. Accordingly, the display data is completed. The CPU **32** supplies the display data to the display unit **14** and causes the display unit **14** to display the FD selection screen SC**9** of FIG. **10**. The FD selection screen SC**9** includes three folders names "F**1**" to "F**3**."

In S**256** of FIG. **7**, the user selects the desired folder name "F**1**" in the FD selection screen SC**9**. In this case, the CPU **32** of the multifunction device **10** supplies selection information including the folder ID "IDD**1**" to the mediation server **50** in S**258**. The folder ID "IDD**1**" is a folder ID associated with the folder name "F**1**" selected by the user among the Y folder IDs included in the Y pieces of FD information of S**242**.

When the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** supplies a UL (Upload) URL request including the folder ID "IDD**1**" within the selection information to the target SP server **100** in S**260**.

When the target SP server **100** acquires the ULURL request from the mediation server **50**, the target SP server **100** supplies a ULURL to the mediation server **50** in S**262**. The ULURL is a URL indicating a location within the folder identified by the folder ID "IDI**1**," that is, a location in which image data to be uploaded from the multifunction device **10** is to be stored.

In S**270**, the CPU **72** of the mediation server **50** generates scan conditions screen information. The scan conditions screen information is information for causing the multifunction device **10** to display a scan conditions screen (see SC**10** of FIG. **10**). Specifically, the CPU **72** determines one layout ID "LY**4**" (see FIG. **2**) and generates scan conditions screen information including respective character strings indicating respective items (that is, resolution, a form, and a size) of the scan conditions, each option of each item, and the layout ID "LY**4**." The scan conditions screen information does not include the target service URL "USE." Then, the CPU **72** supplies the scan conditions screen information to the multifunction device **10** in S**272**.

When the CPU **32** of the multifunction device **10** acquires the scan conditions screen information from the target SP server **100**, the CPU **32** generates display data indicating the scan conditions screen (see SC**10** of FIG. **10**) in S**274**. Specifically, the CPU **32** first acquires the layout data (see FIG. **2**) identified by the layout ID "LY**4**" from the memory **34**. The CPU **32** describes each character string within the scan conditions screen information in the area A**10** (see FIG. **2**) and describes each option within the scan conditions screen information in the area A**11** (see FIG. **2**). Accordingly, the display data is completed. The CPU **32** supplies the display data to the display unit **14** and causes the display unit **14** to display the scan conditions screen SC**10** of FIG. **10**.

In S**276** of FIG. **7**, the user selects desired scan conditions in the scan conditions screen SC**10**. Further, for an item "Resolution," one of a plurality of scan resolutions, including "600 dpi" and "300 dpi," can be selected. For an item "Form," one of a plurality of file formats, including "PDF" and "JPEG," can be selected. For an item "Size," one of a plurality of document sizes, including "A**4**" and "B**4**," can be selected. In S**278**, the CPU **32** of the multifunction device **10** supplies the selection information including the selected scan conditions to the mediation server **50**.

When the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** supplies an SU instruction to the multifunction device **10** in S**280**. The SU instruction includes the ULURL of S**262** and the scan conditions within the selection information of S**278**. The SU instruction is a command to instruct the multifunction device **10** to execute the scanning of the docu-

ment according to the scan conditions to generate image data, and to upload the image data in the location indicated by the ULURL.

When the CPU **32** of the multifunction device **10** acquires the SU instruction from the mediation server **50**, the CPU **32** causes the scan execution unit **18** to execute the scanning of the document according to the scan conditions within the SU instruction in S**290**. Specifically, the CPU **32** notifies the scan execution unit **18** of a scan resolution indicated by "Resolution" included in the scan conditions, and a document size indicated by "Size" included in the scan conditions. Accordingly, the scan execution unit **18** scans the document having the document size with the scan resolution to generate scan data. Then, the CPU **32** executes image processing for scanning for the scan data to generate the image data. The image processing for scanning includes generating image data having the file format indicated by "Form" included in the scan conditions. Then, the CPU **32** supplies an UL request including the ULURL and the image data to the target SP server **100** in S**292**.

When the target SP server **100** acquires the UL request from the multifunction device **10**, the target SP server **100** stores the image data within the UL request in a location indicated by the ULURL within the UL request. That is, the target SP server **100** executes the image data storage function. (Case in which "Scan" is Selected in Main Screen SC**1**; FIG. **8**)

Next, each process executed when "Scan" is selected in the main screen SC**1** (see FIG. **9**) will be described with reference to FIG. **8**. Hereinafter, description of the same process as that in FIGS. **4** to **7** will be omitted. S**310** and S**312** are the same as S**10** and S**12** of FIG. **4**. In S**313**, the user selects an object indicating "Scan" in the main screen SC**1**. In this case, the CPU **32** of the multifunction device supplies display data stored in the memory **34** in advance to the display unit **14** and causes the display unit **14** to display the storage method selection screen SC**11** of FIG. **9** in S**314**. The storage method selection screen SC**11** is a screen for selecting a storage destination of image data generated by document scanning, and includes three objects. An object indicating "Scan to USB" is an object indicating execution of storage of the image data in a USB memory. An object indicating "Scan to Email" is an object indicating execution of E-mail transmission of the image data. An object indicating "Scan to Web" is an object indicating execution of storage (that is, upload) of the image data in the SP server **100**.

In S**315** of FIG. **8**, the user selects the object indicating "Scan To Web" in the storage method selection screen SC**11**. In this case, the CPU **32** of the multifunction device **10** supplies the initial request to the mediation server **50** in S**316**. The initial request includes a MAC address "M**1**" of the multifunction device **10**, scan mode information, and target SFL information. The scan mode information is information included in the initial request when the object indicating "Scan To Web" is selected in the storage method selection screen SC**11**.

When the CPU **72** of the mediation server **50** acquires the initial request from the multifunction device **10**, the CPU **72** executes a determination of the target SFL information and determines "OK" or "NG" as a determination result in S**321**. The determination result of S**321** indicates whether the multifunction device **10** is capable of executing the SU. When the scan permission information within the target SFL information indicates "NG," the CPU **72** determines "NG" as a determination result. In this case, although not illustrated, the CPU **72** supplies error information for causing display of an error screen SCE of FIG. **9** to the multifunction device **10**. That is, the CPU **72** ends the process according to the initial request of S**316** of FIG. **8** without supplying each piece of screen information to be described below (see, for example, S**334**) to the multifunction device **10**. On the other hand, when the scan permission information within the target SFL information indicates "OK," the CPU **72** determines "OK" as a determination result. In this case, each process of S**322**, S**324**, and S**330** is executed, similar to S**22**, S**24**, and S**30** of FIG. **4**.

As described above, in the case of FIG. **8**, when the CPU **72** of the mediation server **50** acquires the initial request including the scan mode information from the multifunction device **10**, the CPU **72** executes a determination of the target SFL information (see S**321**). Accordingly, the multifunction device **10** can rapidly notify the user that the multifunction device **10** is incapable of executing the SU. On the other hand, in the case of FIG. **4**, even when the CPU **72** acquires the initial request including the normal mode information (see S**16**) from the multifunction device **10**, the CPU **72** does not execute the determination of the target SFL information. This is because which of the DP and the SU that the user of the multifunction device **10** desires to execute is still unknown. That is, the initial request of S**16** of FIG. **4** is a request supplied from the multifunction device **10** to the mediation server **50** in a state in which either the DP or the SU to be executed (in other words, either the image processing for printing or image processing for scanning to be executed) has been not yet selected by the user. On the other hand, the initial request of S**316** of FIG. **8** is a request supplied from the multifunction device **10** to the mediation server **50** in a state in which the SU among the DP and the SU being to be executed (in other words, image processing for scanning being to be executed) has been selected by the user.

In S**332**, the CPU **72** of the mediation server **50** generates service selection screen information including a table of FIG. **8** and the layout ID "LY**1**." Specifically, when the CPU **72** generates the table of FIG. **8**, the CPU **72** first excludes service OB information corresponding to the SP server **100** incapable of executing the data storage function from each piece of acquired service OB information. In this embodiment, the SP server **100** corresponding to the service name "SVB" is incapable of executing the data storage function (that is, capable of executing only the data supply function). Therefore, the CPU **72** excludes the service OB information including the service name "SVB" from each piece of acquired service OB information. Then, the CPU **72** generates a table using each piece of remaining service OB information and the acquired history OB information. Further, since a response of S**324** indicates "No registration," the flag "ON" is described in the top column of the table, as in S**32** of FIG. **4**.

As described above, in the case of FIG. **8**, when the CPU **72** of the mediation server **50** acquires the initial request including the scan mode information from the multifunction device **10**, the CPU **72** generates a table in which information on the service name "SVB" of the SP server **100** incapable of executing the data storage function is not described. As a result, the service name "SVB" is not displayed in the service selection screen (see S**12** and S**13** of FIG. **9**) to be described below. Accordingly, it is possible to suppress occurrence of a situation in which the service name "SVB" of the SP server **100** incapable of executing the data storage function is selected, that is, a situation in which the service name "SVB" for which the multifunction device **10** is incapable of executing the SU is selected.

S**334** is the same as S**34** of FIG. **4**. Further, S**340** to S**354** are the same as S**40** to S**54** of FIG. **4** except that a matter regarding the service name "SVB" is not included. As illus-

trated in FIG. **9**, the service selection screen SC**12** displayed first in the multifunction device **10** includes three service names "SVA," "SVC" and "SVD," without including the service name "SVB," unlike the service selection screen SC**2**. Further, a service selection screen SC**13** displayed next in the multifunction device **10** includes only two service names "SVE" and "history," unlike the service selection screen SC**3**.

In S**356** of FIG. **8**, the user selects the service having the service name "SVE" in the service selection screen SC**13**. In this case, the CPU **32** of the multifunction device **10** supplies selection information including the target service name "SVE" to the mediation server **50** in S**358**.

Even when the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** does not execute a determination of the target SFL information. This is because the determination of the target SFL information has been executed in S**321**. This is different from S**60** of FIG. **4**. S**70** to S**98** of FIG. **5** are then executed. However, S**104** to S**116** of FIG. **5** are not executed and S**220** and S**230** of FIG. **7** are not executed. Also, S**232** to S**292** of FIG. **7** are executed. That is, the account selection screen SC**4** of FIG. **9** is displayed, and then the FD selection screen SC**9** of FIG. **10** is displayed without the communication selection screen SC**5** being displayed. This is because the user is known to desire execution of the SU, and thus, it is unnecessary to display the communication selection screen SC**5**. Accordingly, the user does not select the SU in the communication selection screen SC**5**. That is, an unnecessary operation for a user is not executed, thereby improving convenience of the user.

(Case (1) in which Service Name "SVE" is Registered in DB Server **80**; FIG. **11**)

As described above, the selected service information in which the MAC address "M**1**" of the multifunction device **10** and the service name "SVE" are associated is registered in the selected service table **82** within the DB server **80** in S**72** of FIG. **5**. Then, the multifunction device **10** executes the DP or the SU (see FIG. **6** or **7**). Each subsequent process will be described with reference to FIG. **11**.

S**510** to S**522** are the same as S**10** to S**22** of FIG. **4**. In S**524**, the CPU **72** of the mediation server **50** acquires a response including the service name "SVE" from the DB server **80**. S**530** to S**542** are the same as S**30** to S**42** of FIG. **4**. However, the CPU **72** generates a table in which the flag "ON" is associated with the service name "SVE" since the service name "SVE" is included in the above response in S**532**.

In S**550**, the CPU **32** of the multifunction device **10** causes the service selection screen SC**3** to be displayed first. This is because the flag "ON" is associated with the service name "SVE" in the table of FIG. **11**. Accordingly, the user can first view the service selection screen SC**3** including the previously selected service name "SVE." Therefore, when the user desires to select the same service name as the previously selected service name "SVE" again, the user can easily select the service name "SVE." Further, when the screen change button is selected in S**552**, the CPU **32** causes the service selection screen SC**2** to be displayed in S**554**. Each subsequent process is the same as each process subsequent to S**56** of FIG. **4**.

(Case (2) in which Service Name "SVE" is Registered in DB Server **80**; FIG. **12**)

In the case of FIG. **11**, "Web" is selected in the main screen SC**1** in a state in which the service name "SVE" is registered in the DB server **80** in association with the MAC address "M**1**" (see S**514** of FIG. **11**). On the other hand, in the case of FIG. **12**, "Scan" is selected in the main screen SC**1** in a state in which the service name "SVE" is registered in the DB server **80** in association with the MAC address "M**1**."

S**610** to S**622** are the same as S**310** to S**322** of FIG. **8**. In S**624**, the CPU **72** of the mediation server **50** acquires a response including the service name "SVE" from the DB server **80**. S**630** to S**642** are the same as S**330** to S**342** of FIG. **8**. However, the CPU **72** generates a table in which the flag "ON" is associated with the service name "SVE" since the service name "SVE" is included in the response in S**632**. Therefore, the CPU **32** of the multifunction device **10** causes the service selection screen SC**13** including the service name "SVE" to be displayed first in S**650**. Also, when the screen change button is selected in S**652**, the CPU **32** causes the service selection screen SC**12** to be displayed first in S**654**. Each subsequent process is the same as each process subsequent to S**356** of FIG. **8**.

(Case in which Service Name "SVB" is Registered in the DB Server **80**; FIG. **13**)

In this case, "Scan" is selected in the main screen SC**1** in a state in which the service name "SVB" is registered in the DB server **80** in association with the MAC address "M**1**." Among respective processes of FIG. **13**, the same processes as those in FIG. **12** are denoted with the same step numbers as those in FIG. **12**. Hereinafter, only S**625**, S**633**, S**651**, and S**655** will be described.

In S**625**, the CPU **72** of the mediation server **50** acquires the response including the service name "SVB" from the DB server **80**. In S**633**, since the service name "SVB" is included in the response but is not present in the table, the CPU **72** of the mediation server **50** generates a table in which the flag "ON" is associated with the service name "SVA" in the top column. Therefore, the CPU **32** of the multifunction device **10** causes the service selection screen SC**12** including the service name "SVA" to be displayed first in S**651**. Also, when the screen change button is selected in S**652**, the CPU **32** causes the service selection screen SC**13** to be displayed in S**655**.

In the case of FIG. **12**, since the service name "SVE" registered in the DB server **80** is included in the table, the mediation server **50** generates a table in which the flag "ON" is associated with the service name "SVE." On the other hand, in the case of FIG. **13**, when the service name "SVB" registered in the DB server **80** is not included in the table, the mediation server **50** generates the table in which the flag "ON" is associated with the service name "SVA" in the top column Thus, the mediation server **50** can appropriately describe the flag "ON" according to whether the service name registered in the DB server **80** is included in the table. That is, the mediation server **50** can appropriately determine an order in which the multifunction device **10** displays the service selection screens SC**12** and SC**13**.

(Case in which Back Button is Selected in Account Selection Screen SC**4**; FIG. **14**)

Next, each process when the back button is selected in the account selection screen SC**4** will be described. In this case, S**10** to S**60** of FIG. **4** and S**70** to S**94** of FIG. **5** are executed. Therefore, the service name "SVE" is registered in association with the MAC address "M**1**" in the DB server **80** in S**72** of FIG. **5**. In S**700**, the user selects the back button in the account selection screen SC**4**. In this case, the CPU **32** of the multifunction device **10** supplies a return request to the mediation server **50** in S**702**.

When the CPU **72** of the mediation server **50** acquires the return request from the multifunction device **10**, the CPU **72** supplies an information request including the MAC address "M**1**" to the DB server **80** in S**722**. In S**724**, the CPU **72** acquires a response including the service name "SVE" from

the DB server **80**. S**732** to S**742** are the same as S**532** to S**542** of FIG. **11**. Since the service name "SVE" is included in the response, the CPU **72** generates a table in which the flag "ON" is associated with the service name "SVE" in S**732**. Therefore, the CPU **32** of the multifunction device **10** causes the display service selection screen SC**3** including the service name "SVE" to be displayed first in S**750**. Each subsequent process is the same as each process subsequent to S**56** of FIG. **4**.

As described above, in this case, when the service name "SVE" is selected in the service selection screen SC**3**, the service name "SVE" is registered in the DB server **80** before the account selection screen SC**4** is displayed (see S**72** of FIG. **5**). Therefore, when the back button is selected in the account selection screen SC**4**, the mediation server **50** can acquire the service name "SVE" from the DB server **80** (see S**724**), and, as a result, can cause the multifunction device **10** to first display the service selection screen SC**3** including the service name "SVE." Therefore, the user can easily understood the service name "SVE" selected by the user.

(Case in which "History" is Selected in Service Selection Screen SC**3**; FIG. **15**)

Next, each process when the service name "history" is selected in the service selection screen SC**3** will be described. In this case, S**10** to S**54** of FIG. **4** are executed. In S**800**, the user selects the service name "history" in the service selection screen SC**3**. In this case, the CPU **32** of the multifunction device **10** supplies selection information including the service name "history" and a model name "MD" of the multifunction device **10** to the mediation server **50**.

Even when the CPU **72** of the mediation server **50** acquires the selection information from the multifunction device **10**, the CPU **72** does not register the service name "history" in the DB server **80**. This is different from S**70** of FIG. **5**. In S**804**, the CPU **72** supplies history screen information to the multifunction device **10**. The history screen information is information for causing a history screen SC**14** to be displayed, and includes update history information, and a layout ID "LY**5**." The update history information is information corresponding to the model name "MD" of the multifunction device **10**, and is stored in the memory **74** in advance (not illustrated). The update history information is information on a history indicating a service supported by the multifunction device (for example, **10**) having the model name "MD," and time when the service is supported. Further, the layout ID "LY**5**" is not illustrated in FIG. **2**.

When the CPU **32** of the multifunction device **10** acquires the history screen information from the mediation server **50**, the CPU **32** generates display data for causing the display unit **14** to display the history screen SC**14** in S**806**. That is, the CPU **32** acquires the layout data identified by the layout ID "LY**5**" from the memory **34** and describes history information within the history screen information in the acquired layout data. Also, the CPU **32** supplies the display data to the display unit **14** and causes the display unit **14** to display the history screen SC**14**. In S**808**, the user selects the back button in the history screen SC**14**. In this case, the CPU **32** supplies a return request to the mediation server **50** in S**810**.

When the CPU **72** of the mediation server **50** acquires the return request from the multifunction device **10**, the CPU **72** generates service selection screen information in S**832**. S**832** to S**842** are the same as S**32** to S**42** of FIG. **4**. However, when the CPU **72** acquires the return request after supplying the history screen information, the CPU **72** generates a table in which the flag "ON" is associated with the service name "history." Therefore, the CPU **32** of the multifunction device **10** first display the service selection screen SC**3** including the service name "history" in S**850**. Each subsequent process is the same as each process subsequent to S**56** of FIG. **4**.

In this case, even when the service name "history" is selected in the service selection screen SC**3**, the service name "history" is not registered in the DB server **80**, as described above. A reason therefor is as follows. That is, since the plurality of services that can be provided by the plurality of SP servers **100** are services related to the DP or the SU, the user is highly likely to fail in remembering the previously selected service in a situation in which one service is to be selected from the plurality of services. Therefore, in this embodiment, a configuration in which the target service name is registered in the DB server **80** (see S**72** of FIG. **5**) is adopted, and the service selection screen including the target service name is displayed first (see S**550** of FIG. **11**). Accordingly, the user can easily remember the previously selected service name when viewing the first displayed service selection screen and, as a result, easily select the service name as a previously selected service name. Accordingly, the history supply service is not the service related to the DP or the SU, unlike each service provided by each SP server **100**. Accordingly, the user can recognize the history supply service from the plurality of services. Therefore, when the user desires to view the history screen SC**14**, the user can select the screen change button to switch the service selection screen and easily select the service name "history" even when the service selection screen including the service name "history" is not displayed first. In view of this circumstance, the service name "history" is not registered in the DB server **80** in this embodiment.

Further, when the service selection screen SC**2** different from the service selection screen SC**3** displayed immediately before the history screen SC**14** is displayed despite the back button being selected in the history screen SC**14**, a sense of discomfort is likely to be given to the user. In order to prevent this, in this embodiment, when the back button is selected in the history screen SC**14** (see S**808** of FIG. **15**), the mediation server **50** causes the multifunction device **10** to first display the service selection screen SC**3** including the service name "history" despite no service name "history" being registered in the DB server **80**. Accordingly, the service selection screen SC**3** displayed immediately before the history screen SC**14** can be provided to the user and the sense of discomfort can be prevented from being given to the user.

(Each Process Executed by the Mediation Server **50**: FIG. **16**)

FIG. **16** illustrates a flowchart of each process executed by the CPU **72** of the mediation server **50**. Respective cases of FIGS. **4** to **8** and FIGS. **11** to **15** are realized by the CPU **72** executing respective processes according to the flowchart.

In T**10**, the CPU **72** acquires the initial request from the multifunction device **10**. T**10** corresponds to S**16** of FIG. **4**, S**316** of FIG. **8**, S**516** of FIG. **11**, and S**616** of FIGS. **12** and **13**. In T**12**, the CPU **72** determines whether the scan mode information is included in the initial request. When the scan mode information is included in the initial request, the CPU **72** determines YES in T**12** and proceeds to T**14**. On the other hand, when the normal mode information is included in the initial request, the CPU **72** determines NO in T**12**, skips T**14**, and proceeds to T**18**.

In T**14**, the CPU **72** executes a determination of the target SFL information. T**14** corresponds to S**321** of FIG. **8**. When the CPU **72** determines the determination result "NG," the CPU **72** determines NO in T**14**, supplies error information to the multifunction device **10** in T**16**, and ends the process. T**16** corresponds to "NG" being determined (not illustrated) in S**321** of FIG. **8**. On the other hand, when the CPU **72** determines the determination result "OK," the CPU **72** determines

YES in T14 and accesses the DB server 80 in T18. T18 corresponds to S22 of FIG. 4, S322 of FIG. 8, S522 of FIG. 11, and S622 of FIGS. 12 and 13.

In T20, the CPU 72 generates service selection screen information including the flag "ON" according to content of the response acquired from the DB server 80 in T18 and supplies the service selection screen information to the multifunction device 10. T20 corresponds to S32 and S34 of FIG. 4, S332 and S334 of FIG. 8, S532 and S534 of FIG. 11, and S633 and S634 of FIGS. 12 and 13. Further, when the scan mode information is included in the initial request of T10, the CPU 72 generates service selection screen information in which the service name corresponding to the SP server incapable of executing the image data storage function has been excluded in T20. This exclusion of the service name corresponds to S332 of FIG. 8 and S633 of FIGS. 12 and 13.

In T22, the CPU 72 waits for the selection information to be acquired from the multifunction device 10. When the CPU 72 acquires the selection information from the multifunction device 10 (YES in T22), the CPU 72 determines whether the service name included in the selection information is "history" in T24. When the service name included in the selection information is "history," the CPU 72 determines YES in T24 and proceeds to T30. The case in which YES is determined in T24 corresponds to the case of FIG. 15. On the other hand, when the service name included in the selection information is a name different from "history," the CPU 72 determines NO in T24 and proceeds to T40. The case in which NO is determined in T24 corresponds to each case of FIGS. 4 and 8.

In T30, the CPU 72 generates history screen information and supplies the history screen information to the multifunction device 10. T30 corresponds to S804 of FIG. 15. In T32, the CPU 72 waits for the return request to be acquired from the multifunction device 10. When the CPU 72 acquires the return request from the multifunction device 10 (YES in T32), the CPU 72 generates service selection screen information including the flag "ON" associated with the service name "history" and supplies the service selection screen information to the multifunction device 10 in T34. T34 corresponds to S832 and S834 of FIG. 15. When T34 ends, the process returns to T22.

In T40, the CPU 72 determines whether the normal mode information is included in the initial request of T10. When the normal mode information is included in the initial request, the CPU 72 determines YES in T40 and executes a determination of the target SFL information in T42. T42 corresponds to S60 of FIG. 4. When the CPU 72 determines the determination result "NG," the CPU 72 determines NO in T42, supplies error information to the multifunction device 10 in T16, and ends the process. T16 executed in the case of NO in T42 corresponds to S62 of FIG. 4. On the other hand, when the CPU 72 determines the determination result "OK," the CPU 72 determines YES in T42 and registers the target service name in the DB server 80 in T44. T44 corresponds to S70 of FIG. 5. Further, when the scan mode information is included in the initial request, the CPU 72 determines NO in T40, skips T42, and proceeds to T44. Skipping T42 corresponds to the determination of the target SFL information being not executed when the selection information of S358 of FIG. 8 is acquired. When T44 ends, the process proceeds to T50 of FIG. 17.

(Each Process Continued from FIG. 16; FIG. 17)

In T50, the CPU 72 generates account selection screen information and supplies the account selection screen information to the multifunction device 10, as illustrated in FIG. 17. T50 corresponds to S80 and S82 of FIG. 5. The CPU 72 monitors acquiring the return request or the selection information from the multifunction device 10 in T52 and T54. When the CPU 72 acquires the return request from the multifunction device 10 (YES in T52), the CPU 72 proceeds to T18 of FIG. 16, and when the CPU 72 acquires the selection information from the multifunction device 10 (YES in T54), the CPU 72 proceeds to T56. YES in T52 corresponds to a case in which the CPU 72 acquires the return request of S702 of FIG. 14. Further, YES in T54 corresponds to a case in which the CPU 72 acquires the selection information of S98 of FIG. 5.

In T56, the CPU 72 determines whether the normal mode information is included in the initial request of T10 of FIG. 16. When the normal mode information is included in the initial request, the CPU 72 determines YES in T56 and proceeds to T60. When the scan mode information is included in the initial request, the CPU 72 determines NO in T56, skips T60 to T66 and proceeds to T80. YES in T56 corresponds to a case in which the CPU 72 acquires the selection information of S98 of FIG. 5. Further, skipping of T60 to T66 in the case of NO in T56 corresponds to S104 to S116 of FIG. 5 and S220 and S230 of FIG. 7 being not executed in the case of FIG. 8.

In T60, the CPU 72 generates communication selection screen information and supplies the communication selection screen information to the multifunction device 10. T60 corresponds to S104 and S106 of FIG. 5. In T62, the CPU 72 waits for the selection information to be acquired from the multifunction device 10. When the CPU 72 acquires the selection information from the multifunction device 10 (YES in T62), the CPU 72 executes a determination of the target SFL information in T64. T64 corresponds to S130 of FIG. 6 and S230 of FIG. 7.

When the CPU 72 determines the determination result "NG," the CPU 72 determines NO in T64, supplies error information to the multifunction device 10 in T16 of FIG. 16, and ends the process. On the other hand, when the CPU 72 determines the determination result "OK," the CPU 72 determines YES in T64, and determines whether the selection information of T62 indicates "SU" or "DP." in T66. Also, the CPU 72 proceeds to T70 when the selection information of T62 indicates "DP" and T80 when the selection information of T62 indicates "SU."

In T70, the CPU 72 generates image selection screen information and supplies the image selection screen information to the multifunction device 10. T70 corresponds to S140 and S142 of FIG. 6. In T72, the CPU 72 generates print conditions screen information and supplies the print conditions screen information to the multifunction device 10. T72 corresponds to S170 and S172 of FIG. 6. In T74, the CPU 72 supplies a DP instruction to the multifunction device 10. T74 corresponds to S180 of FIG. 6. When T74 ends, the process according to the initial request of T10 of FIG. 16 ends.

In T80, the CPU 72 generates FD selection screen information and supplies the FD selection screen information to the multifunction device 10. T80 corresponds to S240 and S242 of FIG. 7. In T82, the CPU 72 generates scan conditions screen information and supplies the scan conditions screen information to the multifunction device 10. T82 corresponds to S270 and S272 of FIG. 7. In T84, the CPU 72 supplies an SU instruction to the multifunction device 10. T84 corresponds to S280 of FIG. 7. When T84 ends, the process according to the initial request of T10 of FIG. 16 ends.

(Correspondence Relationship)

The multifunction device 10, the mediation server 50, the DB server 80, and the plurality of SP servers 100 are examples of an "image processing device," a "screen information supply server," a "database," and "one or more service providing servers," respectively. The memory 34 of the mul-

tifunction device **10** is an example of a "memory." The selection in S**14** of FIG. **4** is an example of "predetermined instruction" and "first instruction." The selection in S**514** of FIG. **11** is an example of "predetermined instruction" to be given again and "first instruction" to be given again. The selection in S**615** of FIGS. **12** and **13** is an example of "second instruction." The initial request in S**16** of FIG. **4** or the initial request in S**316** of FIG. **8** is an example of "request for the screen information." The operation of the back button in S**700** of FIG. **14** and the operation of the back button in S**808** of FIG. **15** are examples of "return instruction." The initial request in S**16** of FIG. **4**, the initial request in S**516** of FIG. **11**, the return request in S**810** of FIG. **15**, the initial request in S**616** of FIGS. **12** and **13**, and the return request in S**702** of FIG. **14** are examples of a "first request," a "second request," a "third request," a "fourth request," and a "fifth request," respectively.

The service selection screen information in S**34** of FIG. **4**, the service selection screen information in S**534** of FIG. **11**, the service selection screen information in S**834** of FIG. **15**, the service selection screen information in S**634** of FIGS. **12** and **13**, and the service selection screen information in S**734** of FIG. **14** are examples of "first screen information," "second screen information," "third screen information," "fourth screen information," and "fifth screen information," respectively. The flag "ON" within the service selection screen information in, for example, S**534** of FIG. **11** is an example of "instruction information." The selection information in S**58** of FIG. **4**, the selection information in S**802** of FIG. **15**, and the selected service information registered in S**72** of FIG. **5** are examples of "first selection information," "second selection information," and "registration information," respectively.

The service selection screen SC**2** and the service selection screen SC**3** of FIG. **9** are examples of a "first screen" and a "second screen," respectively. The account selection screen SC**4** of FIG. **9** and the history screen SC**14** of FIG. **15** are examples of a "setting screen" and a "specific screen," respectively. The three services having the three service names "SVA," "SVB" and "SVC" in the service selection screen SC**2** and the two services having the two service names "SVD" and "SVE" in the service selection screen SC**3** are examples of "K1 options" and "K2 options," respectively. The service having the service name "History" in the service selection screen SC**3** is an example of a "specific option."

The five service names "SVA" to "SVE" and the five URLs "USA" to "USE" included in the service selection screen information in S**34** of FIG. **4** are examples of "K pieces of option information." The service name "History" and the URL "UH" included in the service selection screen information in S**34** of FIG. **4** are examples of "specific option information." In the service selection screen information in S**634** of FIGS. **12** and **13**, the four service names "SVA," "SVC," "SVD," and "SVE" and the four URLs "USA," "USC," "USD," and "USE" are examples of "M pieces of option information" and "M pieces of service-related information." The case of FIG. **12** and the case of FIG. **13** are examples of a "case in which the target service is included in M services" and a "case in which the target service is not included in the M services." In the table of FIG. **12**, "SVE" with which the flag "ON" is associated is an example of the "target option." In the table of FIG. **13**, "SVA" with which the flag "ON" is associated is an example of "predetermined option."

The image processing for printing executed for the image data acquired from the target SP server having the target service name "SVE" is an example of "image processing related to target option." Further, the image processing for scanning for generating the image data to be supplied to the target SP server having the target service name "SVE" is an example of "image processing related to target option." S**180**, S**190**, and S**192** of FIG. **6** and S**280** and S**292** of FIG. **7** are examples of "specific communication." S**132**, S**134**, S**160**, S**162**, and S**180** of FIG. **6**, and S**232**, S**234**, S**260**, S**262**, and S**280** of FIG. **7** are examples of the "mediation communication."

Second Embodiment; FIG. **18**

In the first embodiment, after the target service name "SVE" is selected in the service selection screen SC**3** (see S**56** of FIG. **4**), the mediation server **50** may supply screen information including the target service URL "USE" to the multifunction device **10** (see S**82** and S**106** of FIG. **5**) or may supply screen information not including the target service URL "USE" to the multifunction device **10** (see S**142** and S**172** of FIG. **6** and S**242** and S**272** of FIG. **7**). Also, when the multifunction device **10** acquires the screen information including the target service URL "USE," the multifunction device **10** displays the screens SC**4** and SC**5** including the service OB of the target service (see FIG. **9**), and when the multifunction device **10** acquires the screen information not including the target service URL "USE," the multifunction device **10** displays the screens SC**7** to SC**10** (see FIG. **10**) that do not include the service OB of the target service. On the other hand, in this embodiment, even when any screen information should be supplied to the multifunction device **10** after the target service name "SVE" is selected in the service selection screen SC**3** (see S**56** of FIG. **4**), the mediation server **50** supplies the screen information including the target service URL "USE" to the multifunction device **10**. For example, the mediation server **50** supplies image selection screen information including the target service URL "USE" in S**142** of FIG. **6**, and supplies print conditions screen information including the target service URL "USE" in S**172**. Other processes of the mediation server **50** are the same as those in the first embodiment.

When the CPU **32** of the multifunction device **10** acquires any one piece of screen information from the mediation server **50**, the CPU **32** executes the process of FIG. **18**. In T**100**, the CPU **32** determines the layout ID included in the acquired screen information. Also, the CPU **32** proceeds to T**102** when the layout ID is "LY**1**," T**104** when the layout ID is "LY**2**," and T**106** when the layout ID is "LY**3**" or "LY**4**."

In T**102**, the CPU **32** causes the display unit **14** to display the service selection screen (for example, SC**2** and SC**3** of FIG. **9**). T**102** is the same as, for example, S**50** and S**54** of FIG. **4**.

In T**104**, the CPU **32** causes the display unit **14** to display the account selection screen SC**4** or the communication selection screen SC**5** (see FIG. **9**) according to the acquired screen information. T**104** is the same as S**94** or S**114** of FIG. **5**. That is, since the layout data identified by the layout ID "LY**2**" has the area A**6** (see FIG. **2**) in which the service OB of the target service can be arranged, the CPU **32** causes the display unit **14** to display the screens SC**4** and SC**5** including the service OB of the target service using the target service URL "USE" included in the acquired screen information in T**104**.

In T**106**, the CPU **32** causes the display unit **14** to display the image selection screen SC**7**, the print conditions screen SC**8**, the FD selection screen SC**9** or the scan conditions screen SC**10** (see FIG. **10**) according to the acquired screen information. T**106** is the same as S**154** and S**174** of FIG. **6** and S**254** or S**274** of FIG. **7**. That is, since the layout data (see FIG. **2**) identified by the layout ID "LY**3**" or "LY**4**," does not have

the area in which the service OB of the target service can be arranged, the CPU **32** causes the display unit **14** to display the screen SC**7** which does not include the service OB of the target service without using the target service URL "USE" included in the acquired screen information in T**106**.

According to this embodiment, when the multifunction device **10** acquires the screen information from the mediation server **50**, the multifunction device **10** determines whether the service OB of the target service can be included in the screen (T**100**). Also, when the multifunction device **10** determines that the service OB of the target service can be included in the screen ("LY**2**" in T**100**), the multifunction device **10** displays a screen including the service OB of the target service (T**104**). When the multifunction device **10** determines that the service OB of the target service cannot be included in the screen ("LY**3** or LY**4**" in T**100**), the multifunction device **10** displays the screen that does not include the service OB of the target service (T**106**). Thus, the multifunction device **10** can display an appropriate screen according to whether there is a space in which the service OB of the target service can be arranged.

While the specific examples of the present invention have been described in detail, these are only illustrative and do not limit the claims. Various variations and modifications of the specific examples illustrated above are included in the technology described in the claims. For example, the following modification examples are included.

MODIFICATION EXAMPLE 1

In each embodiment, a plurality of SP servers **100** for which the mediation server **50** can execute mediation of the service are provided. Alternatively, only one SP server **100** for which the mediation server **50** can execute the mediation of the service may be provided. Also, one SP server **100** may be able to provide a plurality of services. In this case, in S**32** of FIG. **4**, the CPU **72** of the mediation server **50** may generate service selection screen information for selecting a target service from the plurality of services provided by the one SP server **100**. That is, the number of SP servers for which the mediation server can mediate the provision of the service may be one or more.

MODIFICATION EXAMPLE 2

In each embodiment described above, the service selection screen SC**2** of FIG. **9** includes the service names "SVA," "SVB" and "SVC," and the service selection screen SC**3** includes the service names "SVD," "SVE" and "History." That is, the "K1 options" and the "K2 options" are completely different. Alternatively, for example, when the display of the service selection screen is switched, only one service name may be changed. For example, the first service selection screen may include service names "SVA," "SVB" and "SVC," and the second service selection screen may include service names "SVB," "SVC" and "SVD." In this modification example, the first service selection screen and the second service selection screen are examples of a "first screen" and a "second screen," respectively. That is, the "K1 options" and the "K2 options" may include common options.

MODIFICATION EXAMPLE 3

In each embodiment described above, the service selection screens SC**2** and SC**3** are examples of a "first screen" and a "second screen." Alternatively, the "first screen" and the "second screen" may be screens for selecting other types of options. For example, the CPU **32** of the multifunction device **10** may acquire main screen information from the mediation server **50** when a predetermined operation for causing display of a main screen is executed in the operation unit **12**. The main screen may include, for example, two or more screens including a first screen including an object indicating "Print" and an object indicating "Scan", and a second screen including an object indicating "Copy" and an object indicating "FAX." In this case, the CPU **32** may first display the first screen and then display the second screen. For example, when the object indicating "Copy" included in the second screen is selected, the CPU **32** may execute image processing related to "Copy." Also, when the predetermined operation is executed in the operation unit **12** again after the image processing, the CPU **32** may acquire the main screen information from the mediation server **50** again. In this case, the CPU **32** may first display a second screen including the object indicating "Copy." In this modification example, the image processing related to "Copy" is an example of "image processing related to the target option." Further, the four objects are examples of the "K options." That is, the "K options" may be a plurality of options related to a plurality of services, as in the embodiment, and may be a plurality of options related to plural types of functions that can be executed by the multifunction device **10**, as in this modification example. Generally, the "K options" may be a plurality of options to be selected in the image processing device.

MODIFICATION EXAMPLE 4

In each embodiment described above, the CPU **72** of the mediation server **50** registers the target service name "SVE" in the DB server **80** in S**70** of FIG. **5**. Alternatively, the CPU **72** may register the target service name "SVE" in the memory **74** of the mediation server **50**. In this case, the CPU **72** may acquire the target service name "SVE" from the memory **74** of the mediation server **50**, in place of S**522** of FIG. **11**. In this modification example, the memory **74** of the mediation server **50** is an example of a "database." In other words, the mediation server **50** and the DB server **80** may be integrally configured.

MODIFICATION EXAMPLE 5

When the target service name "SVE" is selected in S**56** of FIG. **4**, the CPU **32** of the multifunction device **10** may register information indicating the target service name "SVE" in the memory **34** of the multifunction device **10**. In this case, the CPU **72** of the mediation server **50** may not register the target service name "SVE" in the DB server **80**, and may produce a table not including the flag "ON" when producing the table of FIG. **4** and the table of FIG. **11**. Also, the CPU **32** of the multifunction device **10** may acquire the target service name "SVE" from the memory **34** of the multifunction device **10** and cause the display unit **14** to first display the service selection screen SC**3** including the target service name "SVE" in S**550** of FIG. **11**. In this modification example, the "image processing device" can cause the display unit to first display the second screen when the second screen information is acquired.

MODIFICATION EXAMPLE 6

In each embodiment described above, the history screen SC**14** of FIG. **15** is an example of a "specific screen." However, the "specific screen" is not limited to the history screen SC**14** and may be, for example, a screen indicating an operation manual of the multifunction device **10** or may be a screen

indicating information for causing an error occurring in the multifunction device **10** to be resolved. That is, the "specific screen" may be a screen indicating information not related to K services that can be provided by one or more service providing servers.

MODIFICATION EXAMPLE 7

In each embodiment described above, the CPU **72** of the mediation server **50** generates service selection information including the table in which the flag "ON" is associated with the service name "SVA" in a top column in S**633** of FIG. **13**. Alternatively, the CPU **72** may generate service selection information including a table in which the flag "ON" is associated with a previously determined service name (for example, "SVC") among the respective service names included in the table. In this modification example, the previously determined service name is an example of a "predetermined option."

MODIFICATION EXAMPLE 8

For example, the user of the multifunction device **10** may register only some of the plurality of service names corresponding to the plurality of SP servers **100** in the mediation server **50** as service names that are display targets in advance. In this case, the CPU **72** of the mediation server **50** may generate service selection screen information including the some service names (two or more service names) and not including the other service names in S**32** of FIG. **4**. According to this configuration, the number of service names displayed in the multifunction device **10** decreases, and the user easily selects the service name. In this modification example, the some service names are examples of "K options."

MODIFICATION EXAMPLE 9

in each embodiment described above, the respective processes of FIGS. **4** to **8** and FIGS. **11** to **17** are realized by the CPU **72** of the mediation server **50** executing the process according to software (that is, a program). Alternatively, at least one of these processes may be realized by hardware such as a logical circuit. Similarly, at least one of the respective processes executed by the multifunction device **10** may be realized by hardware such as a logical circuit.

Further, technical elements described in the present specification or drawings exhibit technical usefulness singly or through various combinations, and are not limited to a combination of claim definitions at the time of filing an application. Further, the technology illustrated in the present specification or drawings simultaneously achieves a plurality of objects, and has technical usefulness by achieving one of these objects.

What is claimed is:

1. An image processing device configured to communicate with a screen information supply server and execute image processing, the image processing device comprising:

a display unit; and

a control device configured to execute:

a screen information acquisition process of supplying a request for screen information to a screen information supply server and acquiring first screen information including K pieces of option information related to K options (K is an integer equal to or more than 2) from a screen information supply server when a predetermined instruction that is a trigger of execution of the image processing is given from a user to the image processing device;

a layout data acquisition process of acquiring layout data from a memory that stores layout data representing a layout of a screen to be displayed on the display unit;

a display control process of:

when the first screen information is acquired, causing the display unit to display a first screen including K1 options using K1 pieces of option information (K1 is an integer equal to or more than 1) and the layout data, the K1 pieces of option information being a part of the K pieces of option information included in the first screen information, and

when a screen change instruction is given from the user in a state in which the first screen is displayed on the display unit, causing the display unit to display a second screen including K2 options using K2 pieces of option information (K2 is an integer equal to or more than 1) and the layout data, the K2 pieces of option information being some of the K pieces of option information and different from the K1 pieces of option information; and

an image processing execution process of executing the image processing related to an object option when the target option among the K2 options is selected by the user in a state in which the second screen is displayed on the display unit,

wherein the screen information acquisition process further causes the image processing device to supply the request for the screen information to the screen information supply server and acquiring second screen information including the K pieces of option information from the screen information supply server when the predetermined instruction is given from the user to the image processing device again after the image processing related to the target option is executed, and

wherein the display control process further causes the image processing device to cause the display unit to display the second screen using the K2 pieces of option information among the K pieces of option information included in the second screen information and the layout data when the second screen information is acquired.

2. The image processing device according to claim **1**, wherein

the screen information supply server is configured to mediate provision of K services from one or more service providing servers to the image processing device,

the K options are the K services, and

the computer executable program when executed by the processor causes the image processing device to execute a specific communication execution instruction of executing specific communication for receiving the target service from a target service providing server providing the target service when the target option that is the target service among the K services is selected by the user.

3. A screen information supply server configured to communicate with an image processing device, comprising:

a processor; and

memory storing a computer executable program, when executed by the processor, causing the screen information supply server to execute:

a screen information supply instruction of supplying first screen information including K pieces of option information related to K options to an image processing device when a first request is acquired from the image

processing device in response to a first instruction that is a trigger of execution of image processing being given from a user to the image processing device, the first screen information includes:

first information for causing a display unit of the image processing device to sequentially display two or more screens including the K options;

second information for causing the display unit to first display a first screen of the two or more screens; and

third information for causing the display unit to display a second screen among the two or more screens when a screen change instruction is given from the user to the image processing device in a state in which the first screen is displayed on the display unit, the first screen including K1 options (K1 is an integer equal to or more than 1) that are some of the K options, the second screen including K2 options (K2 is an integer equal to or more than 1) that are a part of the K options, and the K2 options being different from the K1 options; and

a registration instruction of registering registration information indicating a target option in a database when first selection information indicating that the target option has been selected from among the K2 options by the user is acquired from the image processing device after the first screen information is supplied,

wherein the screen information supply instruction further causes the screen information supply server to supply second screen information including the K pieces of option information and instruction information to the image processing device using the registration information in the database when a second request is acquired from the image processing device in response to the first instruction being given from the user to the image processing device again after the image processing device executes the image processing according to the first instruction,

wherein the second screen information is information for causing the display unit to sequentially display the two or more screens including the K options, and

wherein the instruction information in the second screen information is information for instructing the image processing device to first display the second screen among the two or more screens on the display unit.

4. The screen information supply server according to claim **3**, wherein

the screen information supply server is configured to mediate provision of the K services from one or more service providing servers to the image processing device,

the K options are the K services, and

the computer executable program when executed by the processor causes the screen information supply server to execute a mediation communication execution instruction oft executing mediation communication for mediating provision of the target service from a target service providing server providing the target service that is the target option to the image processing device.

5. The screen information supply server according to claim **4**, wherein

the first screen information includes the K pieces of option information related to the K services, and specific option information related to a specific option not related to the K services,

the first screen information is information for causing the display unit to sequentially display the two or more screens including the K options and the specific option,

the registration instruction causes the screen information supply server not to register information indicating the specific option in the database when the second selection information indicating that the specific option has been selected by the user is acquired from the image processing device, and

the screen information supply instruction causes the screen information supply server to supply specific screen information for causing the display unit to display a specific screen not related to the K services to the image processing device when the second selection information is acquired.

6. The screen information supply server according to claim **5**, wherein

the screen information supply instruction causes the screen information supply server to supply third screen information including the K pieces of option information, the specific option information, and instruction information to the image processing device when a third request is acquired from the image processing device in response to a return instruction for returning to the two or more screens being given from the user to the image processing device in a state in which the specific screen is displayed on the display unit,

the third screen information is information for causing the display unit to sequentially display the two or more screens including the K options and the specific option, and

the instruction information in the third screen information is information for instructing the image processing device to first display a screen including the specific option among the two or more screens on the display unit.

7. The screen information supply server according to claim **4**, wherein

the first instruction does not include an indication indicating that any one type of image processing to be executed among two or more types of image processing capable of being executed by the image processing device is selected by the user,

the screen information supply instruction further causes the screen information supply server to supply, to the image processing device, fourth screen information including M pieces of option information (M is an integer equal to or more than 2 and less than K) that are a part of the K pieces of option information, and instruction information when a fourth request is acquired from the image processing device in response to a second instruction that is a trigger of execution of the image processing being given from the user to the image processing device after the image processing device executes the image processing according to the first instruction,

the second instruction includes an indication indicating that a specific type of image processing to be executed among the two or more types of image processing is selected by the user,

the M pieces of option information include M pieces of service-related information related to M services in which communication of the target data related to the specific type of image processing is permitted,

the fourth screen information causes the display unit to sequentially display two or more screens including M options that are the M services, and

the instruction information in the fourth screen information includes:

information for instructing the image processing device to first display a screen including the target option among

the two or more screens on the display unit when the target service indicated by the registration information in the database is included in the M services; and

information for instructing the image processing device to first display a screen including a predetermined option different from the target option among the two or more screens on the display unit when the target service indicated by the registration information in the database is not included in the M services.

8. The screen information supply server according to claim **3**, wherein

the screen information supply instruction further causes the screen information supply server to supply, to the image processing device, setting screen information for causing the display unit to display a setting screen after the registration information is registered in the database and before the image processing device executes the image processing according to the first instruction,

the setting screen is a screen for executing a setting related to the target option,

the screen information supply instruction causes the screen information supply server to supply, to the image processing device, fifth screen information including the K pieces of option information and instruction information using the registration information in the database when a fifth request is acquired from the image processing device in response to a return instruction for returning to the two or more screens being given from the user to the image processing device in a state in which the setting screen is displayed on the display unit,

the fifth screen information is information for causing the display unit to sequentially display the two or more screens including the K options, and

the instruction information in the fifth screen information is information for instructing the image processing device to first display a screen including the target option among the two or more screens on the display unit.

9. The image processing apparatus according to claim **1**, wherein the display control process causes the display unit to display the first screen when the screen change instruction is given from the user in a state in which the second screen is displayed on the display unit.

10. A non-transitory computer readable recording medium storing a computer executable program for a screen information supply server configured to communicate with the image processing device, the computer program when executed by a computer of the screen information supply server, causing the screen information supply server to execute:

a screen information supply instruction of supplying screen information including K pieces of option information related to K options to the image processing device when a first request is acquired from the image processing device in response to a first instruction that is a trigger of execution of image processing being given from a user to the image processing device, the first screen information including first information for causing a display unit of the image processing device to sequentially display two or more screens including the K options, second information for causing the display unit to display a first screen of the two or more screens, and third information for causing the display unit to display a second screen among the two or more screens when a screen change instruction is given from the user to the image processing device in a state in which the first screen is displayed on the display unit, the first screen including K1 options (K1 is an integer equal to or more than 1) that are a part of the K options, the second screen including K2 options (K2 is an integer equal to or more than 1) that are a part of the K options, and the K2 options being different from the K1 options; and

a registration process of registering registration information indicating a target option in a database when first selection information indicating that the target option has been selected from among the K2 options by the user is acquired from the image processing device after the first screen information is supplied,

wherein the screen information supply process further includes supplying second screen information including the K pieces of option information and instruction information to the image processing device using the registration information in the database when a second request is acquired from the image processing device in response to the first instruction being given from the user to the image processing device again after the image processing device executes the image processing according to the first instruction,

wherein the second screen information is information for causing the display unit to sequentially display the two or more screens including the K options, and

wherein the instruction information in the second screen information is information for instructing the image processing device to display the second screen among the two or more screens on the display unit.

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